Mediating impact of integrated reporting on audit quality and market reactions in Africa: evidence from South Africa

Amon Bagonza
School of Accounting, Dongbei University of Finance and Economics, Dalian, China

Yan Chen
School of Accounting, Dongbei University of Finance and Economics, China
Internal Control Research Center, Dalian, China, and

Frederik Rech
School of Accounting, Dongbei University of Finance and Economics, Dalian, China

Received 9 January 2023
Revised 27 July 2023
29 December 2023
21 May 2024
Accepted 10 June 2024

Abstract

Purpose – The purpose of this study is to investigate the mediating impact of integrated reporting on the relationship between audit quality and market reactions in Africa using South Africa as a sample.

Design/methodology/approach – The study sample size consists of 119 firms listed on the Johannesburg Stock Exchange. The study was carried out for the period 2011–2019. Market reactions were proxy by share price and adjusted market returns. The authors controlled for the effects of market reactions by using other firm specifics like operating income, assets, leverage and return on assets and thereafter carried out robustness checks included under additional analysis.

Findings – Results from the study showed that integrated reporting partially mediates the relationship between audit quality and market reactions. Moreover, audit quality has a positive significant impact on market reactions in the form of the share price. The results were obtained in addition to a robustness check using adjusted market returns as a proxy for market reactions.

JEL classification – G10, M40, M42

The authors acknowledge the Dongbei University Finance and economics for giving them the platform and good environment to enable them to study and carry out this research.

Funding: The authors received no funding for this research, and thus, it not applicable.

Author contribution: All authors listed here in contributed greatly to the carrying out of research, with Professor Chen Yan providing valuable guidance and directions, Frederik and Amon combining to write, do data analysis and the rest of the article.

Ethical informed: The manuscript has not been submitted to another journal for simultaneous consideration, is original, has not been published anywhere else in any form or language, results are presented honestly, clearly, without fabrication and authors adhered to discipline-specific rules for acquiring, selecting and processing data.

Conflict of interest: The authors have no conflict of interests to declare.

Data availability statement: Data used in the study was got and is available on individual company websites in form of annual reports. Processed data is available with the corresponding author upon request.

Accounting Research Journal
Vol. 37 No. 4, 2024
pp. 401-417

1030-9616
DOI 10.1108/ARJ-01-2023-0009

Practical implications – Regulators and standard setters in other countries should make integrated reporting mandatory. This study not only informs the public and investors about the organization's business performance but also reveals auditor assurances that enchase market confidence in the company.

Social implications – Exploring the mediating impact of integrated reporting on the relationship between audit quality and market reactions yields valuable insights. Integrated reporting, which combines financial and non-financial information, influences how investors perceive and react to audit quality. Understanding this interplay could shed light on the broader implications for corporate transparency and accountability.

Originality/value – The authors are the first to conduct such a study in an emerging economy. Hence, the authors used integrated reporting as a new variable in the study of audit quality and market reactions. Furthermore, the authors used adjusted market returns under robustness checks to check if audit quality has an impact on market reactions.

Keywords Audit quality, Integrated reporting, Market reactions, Share price, South Africa

Paper type Research paper

1. Introduction

Connelly *et al.* (2011) state that the communication between firms and the market (investors) has an impact on the asset value. It follows that on the day audited reports are issued, asset prices and market values tend to vary/fluctuate (Afifa *et al.*, 2020; Augustine O Okolie, 2014; Almaharmeh *et al.*, 2021). While some studies examine stock market reactions to integrated reporting, few delve into investors' perceptions, and the extent to which they incorporate integrated reporting information into their investment strategies. Understanding investors' attitudes and behaviors toward integrated reporting can shed light on its effectiveness as a communication tool and a link between audit quality and market reactions.

Financial statements auditing acts as a tool for reducing information asymmetry, hence safeguarding the interests of stakeholders (David *et al.*, 2018). Auditors help in reducing financial misstatements in financial statements by preparing audits by setting regulations and standards. Good quality audits increase confidence in stock markets, which ensures access to capital thus a reduction in cost of capital for firms (Hoti *et al.*, 2012). Thus, the effectiveness of public firms can be increased by regulators and implementers setting auditing standards that prove that auditing improves the quality of financial information (David *et al.*, 2018).

A quality audit can allow income management (Alzeban, 2020). However, earnings can be manipulated to make sure that earnings meet the expectation of shareholders. Failure to meet the earnings expected by analysts results in a dejected share price while meeting the expectation of analysts results in an increase in share price in Jordan (Afifa *et al.*, 2020).

Good income management seen through the eyes of audit quality can help earnings per share reach the firm's desired level (David *et al.*, 2018). Because the current income is a sign of the expected cash flows, failing to beat the analysts forecast of earnings per share can lead to a downcast of share price, and the reverse is true (Jordan *et al.*, 2010). That is where the board of directors comes in, especially one comprised of more non-executive directors. Research has shown that such boards do deter earnings management (Khalil and Ozkan, 2016), which improves audit quality (Alhababsah and Yekini, 2021), and thus sending strong signals to the markets through the signaling effect (Connelly *et al.*, 2011).

Integrated reporting refers to how firms communicate their strategy, objectives and value addition to stakeholders (Hoque, 2017). An integrated report is a concise communication of how the firm's strategy, governance, prospects and performance lead to value creation over the short, medium and long term (Rensburg and Botha, 2014). Integrated reporting has been shown to improve firm performance and value (El-Deeb, 2019) in firms that have adopted it. South Africa adopted integrated reporting and set it as a mandate for listing on Johannesburg Stock Exchange (Rensburg and Botha, 2014).

The main purpose of this study is to empirically examine the mediating effect of integrated reporting on the relationship between audit quality and market reactions in South Africa. South Africa was chosen for reasons like: first, pioneer in integrated reporting. South Africa has been a pioneer in the field of integrated reporting. The King III Report on Corporate Governance in 2009 introduced the concept of integrated reporting, and subsequent developments in reporting frameworks, such as the International Integrated Reporting Council (IIRC), have influenced reporting practices in the country.

Second, matured integrated reporting practices. Over the selected time frame (2011–2019), South African companies may have had sufficient time to adopt and mature their integrated reporting practices. This allows for the examination of the mediating impact of integrated reporting as it became more ingrained in corporate reporting practices.

Third, regulatory environment. The regulatory environment in South Africa, particularly with the King Reports on Corporate Governance, may have shaped the integration of non-financial information in corporate reporting. Studying this period allows for an analysis of how regulatory changes influenced reporting practices and their impact on market reactions.

Fourth, data availability and consistency. The availability and consistency of data are crucial for any research study. If South Africa has reliable and comprehensive data on audit quality, integrated reporting and market reactions over the chosen period, it enhances the feasibility and robustness of the study.

Fifth, global relevance: South Africa's experience with integrated reporting and its impact on market reactions may have broader implications for global discussions on corporate reporting practices. Insights from a well-researched South African context could contribute to international debates and best practices. Results from the study indicate that markets react to audit quality and more so integrated reporting mediates the relationship between the audit quality and market reactions at 24% as per Sobel's test. Other control variables are statistically significant.

The paper has four contributions. First, academic advancements in accounting and finance: the study contributes to the academic literature by advancing knowledge in the fields of accounting and finance. It may prompt further research and discussions on the interplay between integrated reporting, audit quality and market reactions.

Second, practical implications for firms: firms may benefit from understanding how integrated reporting influences market reactions. Insights from the study can guide companies in optimizing their reporting practices to enhance transparency, audit quality and ultimately, positive market responses.

Third, guidance for policymakers and standard setters: findings from the study may provide insights that could be valuable for policymakers and standard setters. Understanding the mediating role of integrated reporting can inform the development of regulations and standards related to financial reporting and auditing practices.

Fourth, insights into corporate transparency: integrated reporting involves the disclosure of both financial and non-financial information. The study may shed light on how this comprehensive disclosure contributes to corporate transparency and affects market perceptions.

The findings of the study should help regulators and implementers in Africa to set and advocate for standards that promote good quality auditing such as promoting auditor independence and transparency in reporting financial information and mandating integrated reporting as a requirement for listing on stock exchange for each firm to safeguard the interests of all stakeholders of firms.

Exploring the mediating impact of integrated reporting on the relationship between audit quality and market reactions yields valuable insights. Integrated reporting, which combines

financial and non-financial information, influences how investors perceive and react to audit quality. Understanding this interplay could shed light on the broader implications for corporate transparency and accountability (comprehensive disclosure, enhanced stakeholder communication, quality assurance through auditing and long-term value creation). Understanding the interplay between integrated reporting, audit quality and market reactions provides a nuanced perspective on how corporate transparency and accountability are operationalized and perceived. It can inform best practices, guide regulatory developments and contribute to a corporate environment that prioritizes responsible and accountable business practices.

2. Literature review and hypothesis development

Audit quality refers to the chance that the auditor discovers a breach in financial records and reports it (Tepalagul and Lin, 2015). Audit quality plays a primary role in assuring all stakeholders that the financial records as presented by a firm do contain accurate information on which thing safeguards the interests of shareholders/owners, investors, markets and the general public. Generally speaking, audit quality is significant in assuring the quality of financial reporting information (Clinch *et al.*, 2012).

Audit quality has been and is always critical, and its indicators have been under intense scrutiny (Martin, 2013; Harris and Williams, 2020), from users of financial statements, regulators, investors, issuers and other stakeholders have called for publicly available audit quality indicators. A common ground in this work is the reasoning that audit quality indicators benefit users of financial statements, issuers and auditors by providing audit quality indicators that improve the transparency of audit processes and audit firms. The improved transparency is expected to further market participants and their ability to assess audit quality, audit firms and greater incentive by audit firms to upgrade audit quality (Martin, 2013).

Financial statements auditing acts as a control tool for reducing information unevenness and safeguarding the interests of all stakeholders by ensuring that the financial statements do not contain material misstatements (David *et al.*, 2018). Auditors come in to make sure that financial statements are free and fair, representing no material misstatements. Lower or no material misstatements in financial statements bring about confidence in stock markets, which translates to a reduction in the cost of capital for firms.

Regulators and standard setters should ensure that there is an increase in audit quality by setting standards that guarantee that auditing improves financial statements with respect to material misstatements (David *et al.*, 2018). This is because financial statements users are all interested in audit excellence.

A quality audit can allow income management (Alzeban, 2020). However, earnings can be manipulated to make sure that earnings meet the expectation of shareholders. Failure to meet the earnings expected by analysts results in a dejected share price while meeting the expectation of analysts results in an increase in share price in Jordan (Afifa *et al.*, 2020).

Market reactions refer to the way a stock market reacts to movements in asset prices. We use two measures of market reactions in our study, namely, share price and adjusted market returns.

A share price is the value of an asset at a given point in time (Afifa *et al.*, 2020). Stock price alternation is negative and immediate reverse in the market prospectus of the company's shares (David *et al.*, 2018). Stocks fluctuate for two major reasons, accounting information and management actions (Khajavi and Zare, 2016). Management actions such as manipulating earnings and hiding bad news until it is impossible to hide all lead to stock price reactions that could be drastic like stocks crashing (Kim *et al.*, 2015). We used the firm

financial year-end share price at the date when the financial records were released by the firm.

Adjusted market returns (Ferguson *et al.*, 2018) are computed over 250-day estimation window ending ten days prior to the event window (the day audit reports are released to the public) with returns on the All Ordinaries Index that proxies for market returns. Market adjusted return model is used to calculate abnormal returns (Stephen and Brown, 1980; Mushtaq and Sajid, 2018).

When firms issue audited financial reports, the markets react positively (Bardos, 2011; Mansur *et al.*, 2020) and provide the much needed capital to support the activities of the firm, which could not have been possible, had the audit quality been not good or poor. Such information made public includes audited financial statements, company reports and audit opinion raised by auditors. Such information has a way of getting disseminated to the public immediately it is released.

If such information is of paramount use to investors (Davidson *et al.*, 2004), we can assume that audit quality has an important role in convincing investors and providers of capital of the health and going concern nature of the firm (Bardos, 2011). It follows that on the day audited reports are issued, asset prices and market values tend to vary/fluctuate (Afifa *et al.*, 2020; Augustine O Okolie, 2014; Almaharmeh *et al.*, 2021).

Following the above discussion, we can assert the following hypothesis:

H1. Audit quality has a positive significant effect on the market reactions of firms in Africa.

Audit quality indicators can also be used by regulators in their quality assessment process to let setters of standards know of deficiencies and challenges in current approaches of audit that are brought to light by observing audit quality indicators over time (Martin, 2013). The indicators not only help regulators keep a check on the quality of audits but also serve as a mechanism for continuous improvement. If there are deficiencies or challenges in the current approach, the indicators act as a spotlight, bringing these issues to the forefront. This way, the standards setters can refine the standards, ensuring auditors are equipped to perform a flawless routine every time.

Integrated reporting refers to how firms communicate their strategy, objectives and value addition to stakeholders (Hoque, 2017). An integrated report is a concise communication of how the firm's strategy, governance, prospects and performance lead to value creation over the short, medium and long term (Rensburg and Botha, 2014). Integrated reporting is essential in meeting the information needs of different stakeholders (Zenkina, 2018) as it communicates concisely what the firm is doing to add value to the business its operating in. Integrated reporting was developed as a result of ever-growing accounting complexities and a need to communicate more effectively to all stakeholders (Hoque, 2017). A high-quality audit ensures that the information presented in the integrated report is not just for show but is accurate, reliable and free from any missteps. We therefore propose the following hypothesis:

H2. Audit quality has a direct and significant effect on the level of integrated reporting.

Integrated reporting has been shown to improve firm performance and value (El-Deeb, 2019) in firms that have adopted it. This is because integrated reports do contain sections informing the public about the activities the firm is involved in Hoque (2017) and auditor assurances over the health and going concern of the firm (Rensburg and Botha, 2014).

Integrated reports are approved by directors before they are released to the public (El-Deeb, 2019). A well-diversified and experienced board of directors (Salleh, 2011) deter

potential earnings management. The board of directors is supposed to carry out the policeman effect on management of the firm (Omoye and Aronmwan, 2016). In doing so, they ought to act and be independent (Khalil and Ozkan, 2016). Company acts require firms to have a board of directors consisting of 50% non-executive directors. This is to help the board be independent and act as such.

The board usually consists of a CEO who is not the same as the chairman, and this is very paramount in the reduction of potential earnings management (Salleh, 2011). This is so because an independent chairman is more capable of reducing earnings management than the board of directors. This underscores the importance and confidence building impact of integrated reporting on markets and the best way of conveying audit quality information to the stock markets.

Audit quality and market reactions literature is available, and concludes that audit quality affects stock markets (Clinch *et al.*, 2012; Augustine O Okolie, 2014). We propose that integrated reporting mediates the relationship between audit quality and market reactions because integrated reporting has all to do with reporting the short-, medium- and long-term strategies of a firm to create wealth. Integrated reporting acts as a conduit for improving the quality of disclosed information. It provides a platform for companies to communicate their strategic goals, risk management practices and the impact of their operations on various stakeholders to the stock markets. The combined effect of high audit quality and integrated reporting contributes to a more robust and reliable information environment.

The market, being the keen observer, values transparency and reliability. A high-quality audit provides that assurance. When integrated reporting is backed by a rigorous audit, it enhances the credibility of the information presented. Investors and stakeholders, being the critical audience, are more likely to respond positively to a well-supported, transparent narrative. Integrated reporting is essential in promoting confidence among investors and shareholders as it contains information that is paramount to the overall health of the financial status of the firm in addition to its future developments Therefore, the following hypotheses are tested (Figure 1):

H3. Integrated reporting has a mediation impact on audit quality and market reactions.

H4. Integrated reporting positively mediates the relationship between audit quality and market reactions.

3. Methodology and modeling

Data for the study was collected from audited integrated annual reports of each individual firm from year 2008 to 2019. South Africa was used as a sample size because it has the best developed stock market in Africa and is a strong emerging market in the world. The data obtained was input into Stata software for data manipulation, and we made use of instrument variables regression model to obtain results. We use IV regression model because the dependent variable may be correlated with one of the endogenous variables used in the study.

Source: Own work

Figure 1. Conceptual framework

The variables used in the study are further defined in Table 1

3.1 Audit quality

Widyaningsih *et al.* (2019) define audit quality as a possibility where an auditor will find and report material misstatements in the financial statements of a client. Because the role of an auditor is to assure on the true and fairness of the financial statements, it is given that any material misstatement noticed is brought up to the notice of the client firm. This very process is at the core of audit quality. This whole process is what audit quality is all about. Audit quality following Sari *et al.* (2019) and Friedrich and Pappert (2020) has several measures. We use discretionary accruals (Bartov *et al.*, 2000; Acar and Coskun, 2020) as they are able to divide accruals into discretionary and non-discretionary components, which makes it possible to detect earnings management. The study used discretionary accruals as they were easier to compute from annual reports.

3.2 Market reactions

Market reactions refer to the way a stock market reacts with movements in asset prices. We use two measures of market reactions in our study namely, share price and, adjusted market returns.

Variable name	Definition	Measurement
Dependent variables		
Share price	Price of the asset at time *t* in a stock market	SP
Adjusted market returns	Adjusted market returns (Ferguson *et al.*, 2018) are computed over 250-day estimation window ending ten days prior to the event window (the day audit reports are released to the public) with returns on the All Ordinaries Index that proxies for market returns	Admkt
Independent variable		
Audit quality	Widyaningsih *et al.* (2019) defines audit quality as a possibility where an auditor will find and report material misstatements in the financial statements of a client	Aq
Other variables		
Integrated report	A concise communication about how a firm's strategy, performance, governance and prospects lead to the creation of value over a short, medium and long term	IR
Market to book ratio	A ratio that helps firms determine if its book values are comparable to the market price of its stock	MBR
Leverage	Sum of short-term and long-term debt divided by total assets	LEV
Return on assets	It is the residue of net income divided by total assets, with an aim of showing value created for shareholders	ROA
Assets	A resource owned by a firm as a result of past events from which future economic benefits are expected to flow to the firm (IASB)	Assets
Operating income	Residual income after deducting a firm's operating expenses but before tax	OY

Source: Authors' own creation

Table 1. Showing variables used in the study

A share price is the value of an asset at a given point in time (Afifa *et al.*, 2020). Stock price alternation is negative and immediate reverse in the markets prospectus of the company's shares (David *et al.*, 2018). Stocks fluctuate for two major reasons, accounting information and management actions (Khajavi and Zare, 2016). Management actions such as manipulating earnings, hiding bad news until it is impossible to hide all lead to stock price reactions, which could be drastic like stocks crashing (Kim *et al.*, 2015). Adjusted market returns (Ferguson *et al.*, 2018) are computed over 250-day estimation window ending ten days prior to the event window (the day audit reports are released to the public) with returns on the All Ordinaries Index that proxies for market returns.

4. Modeling

To analyze the relationship between audit quality and market reactions in Africa's emerging market, we use panel least squares model for regression:

$$Mkt = \alpha + \beta_1 Xaq + \beta_2 Xassts + \beta_3 Xmbr + \beta_4 Xlev + \beta_5 Xoy + \beta_6 Xroa + \varepsilon \quad (1)$$

where *Mkt* stands for market reactions, $\propto$ represents the constant, $\beta\beta\beta\beta\beta\beta$ are parameters representing coefficients of regression, *Xaq* represents audit quality, *Xassts* represents assets, *Xlev* represents leverage, *Xmbr* represents market to book ratio, *Xoy* represents operating income, *Xroa* represents return on assets and finally, ε represents the error term.

Equation (1) is further modified into the following model to capture the mediating effect of integrated reporting on audit quality and market reactions:

$$Mkt = \alpha + \beta_1 ir + \beta_2 Xassets + \beta_3 Xmbr + \beta_4 Xlev + \beta_5 Xoy + \beta_6 Xroa + \varepsilon \quad (2)$$

$$Mkt = \alpha + \beta_1 xaq + \beta_2 Xir + \beta_3 Xassets + \beta_4 Xmbr + \beta_5 Xlev + \beta_6 Xoy + \beta_7 Xroa + \varepsilon \quad (3)$$

$$ir = \alpha + \beta_1 xaq + \beta_2 Xassets + \beta_3 Xmbr + \beta_4 Xlev + \beta_5 Xoy + \beta_6 Xroa + \varepsilon \quad (4)$$

Equation (2)–(4) will capture the full effect of the mediating variable (earnings quality) on audit quality and market reactions. Where *Xir* represent integrated reporting. The mediation effect follows the study by Baron and Kenny, which suggests that there must be two paths to a dependent variable from the independent variable (Zhao *et al.*, 2010). This can be observed in equations (1) to (4). We concluded the testing for mediation analysis by carrying out the Sobel test on the mediator and the results are presented.

4.1 Mediating and control variables

The inclusion of integrated reporting in the study is justified by El-Deeb (2019), Rensburg and Botha (2014), Samy (2019), who followed the IASB-defined integrated reporting as a way how firms communicate their strategy, objectives and value addition to stakeholders. Integrated reporting has been found to improve firm performance (Samy, 2019) as it communicates to the markets about the business of the firm. This reporting has got a linkage to market reactions (Rensburg and Botha, 2014).

We used assets, market to book ratio, leverage, return on assets and operating income following Ferguson *et al.* (2018), Bandyopadhyay *et al.* (2014), Davidson *et al.* (2004), Chan *et al.* (2021) and Hossain *et al.* (2014), who all examined and found the above variables controlling for market expectations in their different studies.

4.2 Additional tests

We checked for endogeneity biasness and multi-collinearity and performed other tests like Hausman specific test and mediating tests. Results obtained are in Tables 2, 3, 4, 5. Mediating test was carried out using medsem package in Stata with Sobel test.

Results obtained showed that our endogenous variables were rightly chosen, as depicted in Table 2.

The mediating results obtained show that 24% of the effect of audit quality on market reactions is mediated by integrated reporting, and that the mediated effect is 0.3 times as large as the direct effect of audit quality on market reactions.

5. Results and discussions

5.1 Descriptive statistics

Table 6 shows descriptive statistics results and show audit quality with a mean value of 0.9160, meaning that 91% of firms had better audit quality. Integrated reporting has a mean value of 0.9818, signifying that 98% of the firms sampled did have integrated reporting as it is a requirement to be listed on the Johannesburg Stock Exchange(Rensburg and Botha, 2014). Share price with a mean of 2.8012 and adjusted market returns with a mean value of 0.1029. The adjusted market returns changed 10% as a result of audit quality in the respective firms sampled.

5.2 Correlation results

We checked for multi-collinearity using Pearson correlation matrix and VIF. Results obtained from Pearson correlation matrix showed that the results are all below the 0.8 a mark set by Gujarati (2003), as anything above it shows multi-collinearity. This means our variables are not suffering from multi-collinearity in Table 4. This also shows the study

Estimates	Delta	Sobel	Mote Carlo
Indirect effect	0.197	0.197	0.197
Std. Err	0.037	0.037	0.037
Z-value	5.339	5.339	5.313
p-value	0.000	0.000	0.000
conf.interval	0.125, 0.270	0.125,0.270	0.128, 0.271

Source: Authors' own creation

Table 2. Sobel mediation test results for the mediating impact of significant testing of indirect effect (unstandardized)

	Sp	Admkt	Disc	IS	IR	VIF	1/VIF
SP	1					1.10	0.9126
Admkt	−0.0340	1				1.03	0.9712
Disc	−0.0821	−0.0795	1			1.03	0.9725
IS	0.1277	0.1459	−0.1240	1		1.07	0.9316
IR	0.2665	0.0277	0.0162	0.1683	1	1.10	0.9073
						Mean VIF = 1.07	

Source: Authors' own creation

Table 3. The correlation results of the variables under study

does not suffer from multi-collinearity issues as (Afifa *et al.*, 2020) a value above 5 signifies that the study variables have multi-collinearity issues.

5.3 Regression results

Table 7 shows the regression results of *H1*, with audit quality being positive and statistically significant at 90% confidence level. This means that an increase in audit quality brings about a 10% change in market reactions. In other words, markets confidence increases with an increase in audit quality. Other control variables like assets, leverage, return on assets and operating income are also statistically significant with an R-square of 0.391.

Table 8 shows the regression results of *H2, H3* and *H4,* with audit quality having a positive statistical significance when integrated report is introduced in the equation at 99% confidence interval. Integrated reporting is also positive and statistically significant at 99%

	Share price
Audit quality	1.197*** (3.105)
ASSTS	−3.7610** (5.7310)
MBR	−0.00527 (0.00580)
LEV	−0.00680** (3.1236)
OY	2.72e-09 (4.47e-09)
ROA	−0.0408** (2.2141)
_cons	1.771*** (3.100)
N	1,427
R-sq	0.391

Notes: *t*-statistics in parentheses *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$. With Assts meaning assets, Mbr for market to book ratio, Lev for leverage, OY for operating income, ROA for return on assets and IR for integrated reporting: $Mkt = \alpha + \beta_1 Xaq + \beta_2 Xassts + \beta_3 Xmbr + \beta_4 Xlev + \beta_5 Xoy + \beta_6 Xroa + \varepsilon$
Source: Authors' own creation

Table 4. Showing regression results of *H1* following the equation

Durbin (score) chi2 (5)	= 55.923 ($p = 0.0000$)
Wu-Hausman F (5,1415)	= 11.5429 ($p = 0.0000$)

Source: Authors' own creation

Table 5. Showing endogeneity test of the endogenous variables under study

	N	Mean	SD	Maximum	Minimum
IS	1,428	0.7367	0.4406	1	0
Disc	1,428	1.1301	7.9985	162.75	0
IR	1,428	0.9818	0.1337	1	0
Share price	1,428	2.8012	1.1435	5.4997	−0.7959
Adjusted	1,428	0.1029	0.7581	5.8927	−2.3010

Source: Authors' own creation

Table 6. Descriptive statistics of the variables under study

confidence interval and so are other variables like assets, leverage, operating income and return on assets with an R-square of 0.41.

5.4 Discussions

Audit quality does affect market reactions (Almaharmeh *et al.*, 2021; Hoti *et al.*, 2012) because audit quality shows the health and going concern of the firm in question. Investors are rational people who base their decisions on what they perceive to be going, on and their decisions are usually based on signals coming from firms (Augustine O Okolie, 2014). Firms with higher/better audit quality are more synchronous to markets than firms with lower audit quality (Pham *et al.*, 2020). Augustine O Okolie (2014) found that audit quality has an impact on market stock prices just like in our study. This is so because a high-quality audit sends signals to the markets that the financial information coming from the firm is reliable. Investors will tend to punish firms with lower audit quality by not purchasing their assets (Augustine O Okolie, 2014) as they deem the firm to be financially unreliable.

	Share price	Share price	Share price	IR
Audit quality	1.197** (2.105)		0.918*** (3.110)	0.170*** (5.0120)
ASSTS	−3.7610** (5.7310)	−2.6010* (5.7710)	−3.8910* (5.6310)	8.0712** (6.5711)
MBR	−0.00527 (0.00580)	−0.00577 (0.00583)	−0.00624 (0.00570)	0.000596 (0.000665)
LEV	−0.00680** (3.00236)	−0.00669** (3.00237)	−0.00686** (3.00231)	0.0000365 (3.000270)
OY	2.72e-09 (4.47e-09)	2.30e-09 (4.50e-09)	2.74e-09 (4.40e-09)	−1.50e-11 (5.13e-10)
ROA	−0.0408** (2.0141)	−0.0317* (1.9141)	−0.0416** (2.0138)	0.000482 (1.0161)
IR		2.308*** (3.218)	1.640*** (3.227)	
_cons	1.771*** (3.100)	0.592** (3.216)	0.420* (3.212)	0.824*** (3.0115)
N	1,427	1,427	1,427	1,427
R-sq	0.408	0.406	0.405	0.405

Notes: *t*-statistics in parentheses *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$. With Assts meaning assets, Mbr for market to book ratio, Lev for leverage, OY for operating income, ROA for return on assets and IR for integrated reporting: $Mkt = \alpha + \beta_1 xaq + \beta_2 Xir + \beta_3 Xassets + \beta_4 Xmbr + \beta_5 Xmbr + \beta_6 Xlev + \beta_7 Xoy + \beta_7 Xroa + \varepsilon$

Source: Authors' own creation

Table 7. Regression results of *H2* following the equation

	Adjusted
Audit quality	−0.00778** (2.1247)
ASSTS	−1.2409** (3.9210)
MBR	0.0138*** (1.9396)
LEV	−0.00175 (0.00161)
OY	5.03e-09 (3.06e-09)
ROA	0.0312** (2.0958)
_cons	0.0652** (3.0241)
N	1,427
R-sq	0.3901

Notes: With *t*-statistics in parentheses *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$. with Adjusted referring to adjusted market returns, Assts meaning assets, Mbr for market to book ratio, Lev for leverage, OY for operating income, ROA for return on assets and IR for integrated reporting: $Mkt = \alpha + \beta_1 Xaq + \beta_2 Xassts + \beta_3 Xmbr + \beta_4 Xlev + \beta_5 Xoy + \beta_6 Xroa + \varepsilon$

Source: Authors' own creation

Table 8. Showing regression results of robustness check for hypothesis one following the equation

Integrated reporting is positive and statistically significant because, first of all, integrated reporting improves firm performance (Samy, 2019), as it brings out all the strategy, objectives, future outlook of the firm and its business involvements. This, coupled with assurances from auditors about the financial information reliability, acts to improve market confidence in the reliability of the financial information of firms (Rensburg and Botha, 2014), thus gaining traction in stock markets and affecting asset values of the firm (El-Deeb, 2019). A firm that issues integrated reporting has better performance. Integrated reporting is for all stakeholders of the firm (Maroun and Atkins, 2015), including governments, the publics, investors, directors and shareholders, among others. This makes integrated reporting a crucial tool to disseminate firm information to the public and markets to attract investors who will provide the much-needed capital to finance the firms other activities (Rensburg and Botha, 2014).

Integrated reporting is a way for companies to report their performance in a way that is easy for investors, stakeholders and others to understand. The idea is that transparency leads to better understanding, which in turn leads to more confidence.

The relationship between audit quality and market reactions can be mediated through integrated reporting by allowing the company to provide more information about how they are doing and why they are doing it. This will help investors and other stakeholders understand what is going on with the company in a way that is easier than digging through financial statements or listening to management speak at an investor conference. Integrated reporting can help improve audit quality by providing better information for investors to assess a company's performance, which may lead to fewer audits in the future. Theoretically, a higher quality audit should result in less market reaction when problems are found in an audit. Investors who want more information from companies should consider investing in companies that have implemented integrated reporting programs.

Integrated reporting, although has a weakness of lack of a high level of assurance obtained due to differing audit regulations (Oprisor, 2015), it nevertheless has assurances from the client-firm auditors about the reasonable truthfulness of the information contained therein, which includes financial information as well as environmental information. This makes it worth a study/reading by shareholders and investors to find out the financial health of the firm they are interested in.

Integrated reporting primary users are the financial capital providers (Slack and Tsalavoutas, 2018). That is why, it is valued by investors (Gerwanski *et al.*, 2022) because it contains information that is crucial for decision-making on where to make investments and the types of risks that managers are undertaking to secure the wealth of capital providers (shareholders/investors). This shows how integrated reporting affects market reactions positively as it communicates to investors about the firm, hence helping in the investment decision-making of investors.

An integrated approach to audit assurance provides an instant solution to providing assurance over the integrated report (Maroun, 2017). Integrated reports are embedded with audit quality indicators such as audit opinion, audit assurances, environmental audit assurances and other audit quality indicators, which show the culture and financial health of a firm or at least offer assurance of the financial health of a firm. Audit quality indicators such as discretionary accruals and earnings quality can be computed from figures embedded in integrated reports year on year because integrated reports allow for comparison purposes to have at least five-year financial figures. This can help in estimating audit quality over the same period for comparison purposes.

Integrated reporting is a silver bullet (Rensburg and Botha, 2014) for communicating financially if a firm is to realize its goal of communicating to the wider market consisting of

capital providers in the short, medium and long run. This makes it so essential in mediating the relationship between audit quality and stock market reactions. Thus, integrated reporting becomes the bridge between the company's narrative and the market's perception.

5.6 Further analysis

We used adjusted market returns as a proxy for market reactions as seen in Tables 9 and 10. The use of adjusted market returns is justified in literatures of Sherwood and Pollard (2017) and Mushtaq and Sajid (2018) who used it to measure market returns in a stock market.

Results do support the studies above showing that audit quality causes market reactions to fluctuate depending on the direction of audit quality, i.e. positive or negative (Pham *et al.*, 2020). Audit quality affects market reactions (Mansur *et al.*, 2020) as the quality of audit informs investors and traders about the reliability of the financial reports and information coming from the firm (David *et al.*, 2018; Clinch *et al.*, 2012). The importance of integrated reporting is highlighted by Samy (2019) in explaining to the market and investors about the health of the firm and its strategies, how it accounts for its resources and its future outlook (Maroun and Atkins, 2015). This is after agreeing with the statistically significant relationship between audit quality and market reactions.

To further control for endogeneity and omitted variables as, we used the regress command, and the results obtained from the study show that audit quality is positive and statistically significant to market reactions at 99% confidence level, further supporting (Mansur *et al.*, 2020; Clinch *et al.*, 2012) that traders/investors pay attention to audit quality exhibited by a firm as part of their investment decisions (Augustine O Okolie, 2014).

Integrated reporting is also positive and statistically significant at 99% to market reactions, also supporting literature (Samy, 2019; El-Deeb, 2019) that integrated reporting

	Adjusted	Adjusted	Adjusted	IR
Audit quality	0.00778** (2.3247)		0.00782*** (5.3248)	0.170*** (3.0120)
ASSTS	−1.2409** (3.9210)	−1.2409** (3.9310)	−1.2509** (3.9210)	8.0712 (6.5711)
MBR	0.0138***(2.1396)	0.0139*** (2.1398)	0.0136*** (3.2396)	0.000596 (3.665)
LEV	−0.00175 (0.00161)	−0.00172 (0.00162)	−0.00176 (0.00161)	0.0000365 (0.000270)
OY	5.03e-09 (3.06e-09)	5.01e-09 (3.07e-09)	5.04e-09 (3.06e-09)	−1.50e-11 (5.13e-10)
ROA	0.0312** (2.4958)	0.0298** (2.2962)	0.0308** (2.2959)	0.000482 (3.2161)
IR		0.133*** (5.149)	0.141*** (5.148)	
_cons	0.0652**(3.0241)	0.0736*** (2.147)	0.0722*** (4.147)	0.824*** (3.0115)
N	1,427	1,427	1,427	1,427
R-sq	0.392	0.390	0.390	0.391

Notes: With *t*-statistics in parentheses *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$. With Adjusted referring to adjusted market returns, Assts meaning assets; Mbr for market to book ratio; Lev for leverage; OY for operating income, ROA for return on assets and IR for integrated reporting: $Mkt = \alpha + \beta_1 xaq + \beta_2 Xir + \beta_3 Xassets + \beta_4 Xmbr + \beta_5 Xmbr + \beta_6 Xlev + \beta_7 Xoy + \beta_7 Xroa + \varepsilon$

Source: Authors' own creation

Table 9. Showing robustness check for regression results following equation (2)

chi2(5) =(b-B)'[(V_b-V_B)^(−1)](b-B)	= 9.83
prob > chi2	= 0.0801

Source: Authors' own creation

Table 10. Hausman specific test calling for using random effects regression model

improves firm performance as it communicates (De Beer, 2014) the firms strategy, objectives and value creation to a wider stakeholder base.

7. Conclusion and recommendations

The study was conducted to determine the relationship between audit quality and market reactions in Africa and, more specifically, the mediating impact of investor sentiments on the relationship between audit quality and market reactions. South Africa was selected as a sample size because it has the best developed stock market in Africa, is a pioneer of integrated reporting in Africa, matured integrated reporting practices, regulatory environment and data availability.

Audit quality was proxy by discretionary accruals, and market reactions were proxy by two variables, adjusted market returns and share price. Other control and endogenous variables were introduced to control for the effects of the study, and these included assets, operating income, return on assets, leverage and market to book ratio.

The results obtained showed that audit quality has a positive and significant relationship with market reactions and, more specifically, integrated reporting does mediate the relationship between market reactions and audit quality. In total, 24% of the effects of audit quality on market reactions can be explained by integrated reporting. A possible reason for this is that because integrated reports are issued by firms containing assurance reports from auditors and the firms future outlook, strategy and businesses, markets are confident in the reliability of the financial information present in integrated reports due to assurances from auditors (Rensburg and Botha, 2014). Integrated reports send signals (Connelly *et al.*, 2011) to the markets, thus the relationship with share price and audit quality.

First, academic advancements in accounting and finance: the study contributes to the academic literature by advancing knowledge in the fields of accounting and finance. It may prompt further research and discussions on the interplay between integrated reporting, audit quality and market reactions.

Second, practical implications for firms: firms may benefit from understanding how integrated reporting influences market reactions. Insights from the study can guide companies in optimizing their reporting practices to enhance transparency, audit quality and ultimately, positive market responses.

Third, guidance for policymakers and standard setters: findings from the study may provide insights that could be valuable for policymakers and standard setters. Understanding the mediating role of integrated reporting can inform the development of regulations and standards related to financial reporting and auditing practices.

Fourth, insights into corporate transparency: integrated reporting involves the disclosure of both financial and non-financial information. The study may shed light on how this comprehensive disclosure contributes to corporate transparency and affects market perceptions.

The findings of the study should help regulators and implementers in Africa to set and advocate for standards that promote good quality auditing such as promoting auditor independence and transparency in reporting financial information and mandating integrated reporting for each firm to safeguard the interests of all stakeholders of firms. The study had limitations like lack of access to data for all emerging markets in Africa, thus settling with South Africa only. We recommend further research on how integrated reporting may enhance investor perceptions in Africa.

References

Acar, G. and Coskun, A. (2020), "A comparison of models for predicting discretionary accruals: a cross-country analysis", *The Journal of Asian Finance, Economics and Business*, Vol. 7 No. 9, pp. 315-328, doi: 10.13106/JAFEB.2020.VOL7.NO9.315.

Afifa, M.A., Alsufy, F. and Abdallah, A. (2020), "Direct and mediated associations among audit quality, earnings quality, and share price: the case of Jordan", *International Journal of Economics and Business Administration*, Vol. 8 No. 3, pp. 500-516, doi: 10.35808/ijeba/540.

Alhababsah, S. and Yekini, S. (2021), "Audit committee and audit quality: an empirical analysis considering industry expertise, legal expertise and gender diversity", *Journal of International Accounting, Auditing and Taxation*, Vol. 42, p. 100377, doi: 10.1016/j.intaccaudtax.2021.100377.

Almaharmeh, M.I., Shehadeh, A.A., Iskandrani, M. and Saleh, M.H. (2021), "Audit quality and stock price synchronicity: evidence from emerging stock markets", *Journal of Asian Finance, Economics and Business*, Vol. 8 No. 3, pp. 833-843, doi: 10.13106/jafeb.2021.vol8.no3.0833.

Alzeban, A. (2020), "The relationship between the audit committee, internal audit and firm performance", *Journal of Applied Accounting Research*, Vol. 21 No. 3, pp. 437-454, doi: 10.1108/JAAR-03-2019-0054.

Augustine O Okolie, F.I.O.I. (2014), "The impact of audit quality on share prices of quoted companies in Nigeria", *Journal of Finance and Accounting*, Vol. 5, pp. 150-167, available at: www. iiste.org

Bandyopadhyay, S.P., Chen, C. and Yu, Y. (2014), "Mandatory audit partner rotation, audit market concentration, and audit quality: evidence from China", *Advances in Accounting*, Vol. 30 No. 1, pp. 18-31, doi: 10.1016/j.adiac.2013.12.001.

Bardos, K.S. (2011), "Quality of financial information and liquidity", *Review of Financial Economics*, Vol. 20 No. 2, pp. 49-62, doi: 10.1016/j.rfe.2011.01.001.

Bartov, E., Gul, F.A. and Tsui, J.S.L. (2000), "Discretionary-accruals models and audit qualifications", *In Journal of Accounting and Economics*, Vol. 30 No. 3, pp. 421-452, doi: 10.1016/S0165-4101(01)00015-5.

Chan, D.K., Li, X. and Xin, Q. (2021), "Institutional investor inattention and audit quality", *Journal of Accounting and Public Policy*, Vol. 40 No. 3, doi: 10.1016/j.jaccpubpol.2021.106857.

Clinch, G., Stokes, D. and Zhu, T. (2012), "Audit quality and information asymmetry between traders", *Accounting and Finance*, Vol. 52 No. 3, pp. 743-765, doi: 10.1111/j.1467-629X.2011.00411.x.

Connelly, B.L., Certo, S.T., Ireland, R.D. and Reutzel, C.R. (2011), "Signaling theory: a review and assessment", *Journal of Management*, Vol. 37 No. 1, pp. 39-67, doi: 10.1177/0149206310388419.

David, O.U., Boniface, U.U. and Christian, U.N. (2018), "Effect of audit quality on market price of firms listed on the Nigerian stock market", *Journal of Accounting and Taxation*, Vol. 10 No. 6, pp. 61-70, doi: 10.5897/jat2018.0293.

Davidson, W.N., Xie, B. and Xu, W. (2004), "Market reaction to voluntary announcements of audit committee appointments: the effect of financial expertise", *Journal of Accounting and Public Policy*, Vol. 23 No. 4, pp. 279-293, doi: 10.1016/j.jaccpubpol.2004.06.001.

De Beer, E. (2014), "Creating value through communication", *Public Relations Review*, Vol. 40 No. 2, pp. 136-143, doi: 10.1016/j.pubrev.2014.02.024.

El-Deeb, M.S. (2019), "The impact of integrated reporting on firm value and performance: evidence from Egypt", *Alexandria Journal of Accounting and Research*, Vol. 3 No. 2, pp. 1-50, doi: 10.21608/aljalexu.2019.56831.

Ferguson, A., Lam, P. and Ma, N. (2018), "Market reactions to auditor switches under regulatory consent and market driven regimes", *Journal of Contemporary Accounting and Economics*, Vol. 14 No. 2, pp. 197-215, doi: 10.1016/j.jcae.2018.05.001.

Friedrich, C. and Pappert, N. (2020), "Anticipation of mandatory audit firm rotation and audit quality", October.

Harris, M.K. and Williams, L.T. (2020), "Audit quality indicators: perspectives from Non-Big four audit firms and small company audit committees", *Advances in Accounting*, Vol. 50, p. 100485, doi: 10.1016/j.adiac.2020.100485.

Hoque, M.E. (2017), "Why company should adopt integrated reporting?", *International Journal of Economics and Financial Issues*.

Hossain, M., Mitra, S. and Rezaee, Z. (2014), "Voluntary disclosure of reasons for auditor changes and the capital market reaction to information disclosure", *Research in Accounting Regulation*, Vol. 26 No. 1, pp. 40-53, doi: 10.1016/j.racreg.2014.02.004.

Hoti, A.H., Ismajli, H., Ahmeti, S. and Dërmaku, A. (2012), "Effects of audit opinion on stock prices: the case of Croatia and Slovenia", *Euro Economica*, Vol. 2 No. 31, pp. 75-87.

Jordan, C.E., Clark, S.J. and Hames, C.C. (2010), "The impact of audit quality on earnings management to achieve user reference points in EPS", *Journal of Applied Business Research (JABR)*, Vol. 26 No. 1, pp. 19-30, doi: 10.19030/jabr.v26i1.273.

Khalil, M. and Ozkan, A. (2016), "Board independence, audit quality and earnings management: evidence from Egypt", *Journal of Emerging Market Finance*, Vol. 15 No. 1, pp. 84-118, doi: 10.1177/0972652715623701.

Kim, H., Lee, H. and Lee, J.E. (2015), "Mandatory audit firm rotation and audit quality", *Journal of Applied Business Research (JABR)*, Vol. 31 No. 3, pp. 1089-1106, doi: 10.19030/jabr.v31i3.9245.

Mansur, I., Olushola, F.K., Timothy, U., Ojo, T. and Olatunji, L. (2020), "Effect of audit quality on market price per share of quoted deposit money banks (dmbs) in Nigeria", *International Journal of Social Science and Economic Research*, Vol. 5 No. 12, pp. 3921-3944, doi: 10.46609/ijsser.2020.v05i12.014.

Maroun, W. and Atkins, J. (2015), *The Challenges of Assuring Integrated Reports: Views from the South African Auditing Community*, ACCA (Association of Chartered Certified Accountants), London, pp. 1-20.

Martin, R.D. (2013), "Audit quality indicators: audit practice meets audit research", *Current Issues in Auditing*, Vol. 7 No. 2, pp. 17-23, doi: 10.2308/ciia-50581.

Mushtaq, R. and Sajid, M. (2018), "The economic cost of terrorism and natural disasters: a deeper analysis of the financial markets of Pakistan", *SSRN Electronic Journal*, doi: 10.2139/ssrn.3191594.

Omoye, A.S. and Aronmwan, E.J. (2016), "Audit firm rotation and audit quality in the Nigerian banking sector", *Journal of Accounting and Finance UNIBEN*, Vol. 2 No. 3, pp. 2-16.

Pham, C.B.T., Vu, T.M.T., Nguyen, L.H. and Nguyen, D.D. (2020), "Audit quality and stock return co-movement: evidence from Vietnam", *The Journal of Asian Finance, Economics and Business*, Vol. 7 No. 7, pp. 139-147, doi: 10.13106/jafeb.2020.vol7.no7.139.

Rensburg, R. and Botha, E. (2014), "Is integrated reporting the silver bullet of financial communication? A stakeholder perspective from South Africa", *Public Relations Review*, Vol. 40 No. 2, pp. 144-152, doi: 10.1016/j.pubrev.2013.11.016.

Salleh, N. (2011), "A panel data analysis on the effects of independent directors characteristics, ethnicity and the level of risks on discretionary accruals in Malaysian manufacturing companies (2003-2009)", *AFAANZ Conference*, April 2016.

Samy, M. (2019), "The impact of integrated reporting on firm value and performance: evidence from Egypt the impact of integrated reporting on firm value and performance: evidence from Egypt Mohamed Samy El-Deeb associate professor of accounting faculty of management scie", *Accounting Research Journal*, Vol. 3 No. 2, pp. 1-33.

Sari, S.P., Diyanti, A.A. and Wijayanti, R. (2019), "The effect of audit tenure, audit rotation, audit fee, accounting firm size, and auditor specialization to audit quality", *Riset Akuntansi Dan Keuangan Indonesia*, Vol. 4 No. 3, pp. 186-196, doi: 10.23917/reaksi.v4i3.9492.

Sherwood, M.W. and Pollard, J.L. (2017), "The risk-adjusted return potential of integrating ESG strategies into emerging market equities", *Journal of Sustainable Finance and Investment*, Vol. 8 No. 1, pp. 1-19, doi: 10.1080/20430795.2017.1331118.

Stephen, J. and Brown, J.B.W. (1980), "Measuring security price performance", *Journal of Financial Economics*, Vol. 8 No. 3, pp. 205-280, doi: 10.1016/0304-405X(80)90002-1.

Tepalagul, N. and Lin, L. (2015), "Auditor independence and audit quality: a literature review", *Journal of Accounting, Auditing and Finance*, Vol. 30 No. 1, pp. 101-121, doi: 10.1177/0148558X14544505.

Widyaningsih, I.A., Harymawan, I., Mardijuwono, A.W., Ayuningtyas, E.S. and Larasati, D.A. (2019), "Audit firm rotation and audit quality: comparison before vs after the elimination of audit firm rotation regulations in Indonesia", *Cogent Business and Management*, Vol. 6 No. 1, doi: 10.1080/23311975.2019.1695403.

Zenkina, I.V. (2018), "Global promotion of integrated reporting by enhancing its informative and analytical value for stakeholders", *European Research Studies Journal*, Vol. 21 No. 2, pp. 518-530.

Zhao, X., Lynch, J.G. and Chen, Q. (2010), "Reconsidering baron and Kenny: myths and truths about mediation analysis", *Journal of Consumer Research*, Vol. 37 No. 2, pp. 197-206, doi: 10.1086/651257.

Corresponding author
Amon Bagonza can be contacted at: amonbagonza@yahoo.com