



The moderating role of audit quality between earning management and sustainable investment opportunities: Evidences from gulf cooperation council countries

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Abstract

This study examines the relationship between the earning management and audit quality on sustainable investment opportunities in the Gulf Cooperation Council (GCC) countries, including, Bahrain, Oman, Qatar, Saudi Arabia, Kuwait and United Arab Emirates. Further, moderating relationship of audit quality between earnings management and sustainable investment is also investigated in the present study. This study includes the data of 1337 companies and their-year observations from the period of 2011 to 2017. This study used the Panel Data Ordinary Least Squares with correlated random effect to examine the direct relationship and the moderated multiple regression to examine the moderating effects of audit quality on the earnings management and sustainable investment opportunities relationship. The results demonstrate that the earnings' management encompasses a significant negative relationship with sustainable investment opportunities but on the other side, it also displays a positive relationship between audit quality and sustainable investment opportunities. Furthermore, the study investigates the moderating effect of audit quality on the relationship of earning management and sustainable investment opportunities. Empirical evidence suggests that the audit quality plays a vital role in mitigating the agency theory problem and reducing the information asymmetry. These findings suggest that the big audit firms act as a good governance representatives for the management and it further enhances the credibility of accounting information for the new investors. This research has several usages for policymakers and investors in the GCC. The investors should assess their choice when they are investing in firms. The big auditing firms mitigates earnings management, which may raise sustainable investment opportunities. Thus, listed firms in the GCC should implement governance and disclosure practices that strengthen the credibility of financial earnings and reduce the danger for investors who later discovers poor investment decisions.

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1. Introduction

Sustainable investment is an important issue for developed and developing countries. The scarcity of resources in these countries leads to discover an alternative solution for this issue. Furthermore, the threat of insufficient capabilities in meeting the needs of the society, where resources are limited, have been a concern in most of the countries (Abdel-Gadir, 2020; Al-Saidi, Zaidan, & Hammad, 2019). Therefore, governments in those countries encourage and support companies to achieve sustainable investment opportunities with higher growth opportunities and community aspiration. (Alhowaish, 2016; Connelly & Xydis, 2021; Fatima, Mentel, Doğan, Hashim, & Shahzad, 2022). Gulf Cooperation Council (GCC) countries hold an essential part of the world's

economy and the upper echelon in the Middle Eastern countries. According to Al-Saidi et al. (2019) GCC countries are the largest oil reservoirs and oil exporters in the world that constitute two-thirds of the global GDP (gross domestic product) (Fatima et al., 2022). Unfortunately, scholars still argue that due to the uncertainty of oil reserves, GCC countries might face several economic challenges (Connelly & Xydis, 2021) as oil resources would deplete in future. Furthermore, GCC countries have also been facing many other economic challenges (Kabbani & Mimoune, 2021). Abdel-Gadir (2020) study the key challenges that the GCC countries have been facing in achieving sustainable market growth such as the ability to create diversity in the investment outside the energy sector, labor market imbalances and unemployment. The GCC countries' population is expected to increase over 30% in the coming years. The investment strategies will need to incorporate financial and non-financial components, where the financial components generate value for the shareholders (Alsayegh, Abdul Rahman, & Homayoun, 2020). The non-financial components protect the rights of the other stakeholders, in terms of social and environmental responsibilities. Therefore, sustainable investment opportunities could help these countries to recover from their financial challenges.

Previous studies about GCC countries have investigated the economic sustainability from multiple perspectives. Alhowaish (2016) studied the relationship between the tourism sector and economic growth amongst all GCC countries except Oman. Moreover, Malik et al. (2019) suggested the drivers and barriers to use renewable energy in GCC countries because they need to achieve economic diversification for economic environmental sustainability. Political role in achieving economic sustainability has also been highlighted by Al-Saidi et al. (2019). Additionally, Zaidan, Al-Saidi, and Hammad (2019) argued that sustainable development in GCC countries can be achieved by investigating the factors that could have been affecting the sustainable investment opportunities from a financial perspective. This is an attractive area for a more stable investment in the GCC market in the future. Good investment opportunities will help to improve the market sustainability and recover any financial threats in the future. Therefore, this study fills the gap by focusing on the financial components rather than the corporate sustainability components, for instance, earning management, audit quality and sustainable investment opportunities.

The earnings management is an important friction that affects sustainable investment opportunities. Previous studies have suggested that earning management on company resources could have an effect on sustainability investments (Chen & Yuan, 2004; Chen, Huang, Li, & Zhang, 2018; Huang & Li, 2016). Earnings management is a phenomenon of concern by accounting researchers for the last decade. According to Jensen and Meckling (1976), earning management is a type of agency costs in which shareholders running of the business on behalf of agents. Some managers exploit the power granted by shareholders to achieve their personal agenda and interests. Thus, some companies rely on the published financial statements of those companies which have reliable evaluation of analysts. In addition to this, these companies find a source of motivation for the earnings' management to cater the expectations of analysts because if these expectations are not followed properly it may lead to decrease in sustainable investment opportunities. In terms of earnings management in the GCC, Habbash and Alghamdi (2017) argued that Saudi companies engage in earnings management. Hessayri and Saihi (2015) found that several UAE firms engage in earnings management, but they suggested that the appropriate use of corporate governance mechanisms can mitigate the earnings management. The effects of earnings management on investment choice and board of directors play pivotal role in improving investment efficiency. Biddle and Hilary (2006) argued that earnings management lead to less investment opportunities, that can affect investment sustainability. These issues will cause market problems in allocating resources across companies. On the other hand, managers require more finances to increase their operating activities within the companies. In this regard, managers will face market constraints as external finances will increase their cost of financing. As a result, the managers will use accounting manipulation to increase or decrease the earnings of their companies and subsequently they will lower the cost of finances to attract more investors. McNichols and Stubben (2008) stated that earnings management practices have helped companies to make optimal investment decisions and that investment sustainability is achieved only during the misreporting period. Therefore, it is argued that earnings management is not an effective way to allocate resources and achieve sustainable investment opportunities due to report manipulation.

The second important financial component is the role of audit quality on investment sustainability. In this regard, Lai (2009) argued that the companies, which have high investment opportunities looks for more opportunities of investment sustainability. This requires a higher quality of audit. Managers of companies who create a sustainable investment, they will must have more opportunities and flexibility for earnings management practices (Lai, 2009). Therefore, companies that appoint big audit firms and use earnings management practices may secure a more sustainable investment over those companies that do not appoint big audit firms. The lack of proper monitoring mechanisms over the management will decrease investors' perception about the firms and they face a higher risk on their investment. Moreover, the assurance of monopolistic management and sharking behavior of managers may not help with the credibility of information provided to the investors. In this regard, there has been multiple studies on the moderating effects of audit quality such as litigation risks and earnings management, real earnings management and stock return (Ismail & Witarno, 2016), reserve account disclosure transparency and accrual earnings management (Binti Nono & Khomsatun, 2018), financial reporting quality and audit committee in Malaysia (Hasan, Rahman, Sumi, Chowdhury, & Miraz, 2020; Shahanif, 2017) and IFRS (International Financial Reporting Standards) adoption and earnings management

(Hasan et al., 2020). Nevertheless, none of these studies assess the moderating role of audit quality on earnings management and sustainable investment opportunities. As a result, the earnings management practices can have an effect on the corporate investment sustainability which has gathered some concerns in the academic research, specifically in developing markets i.e., GCC countries. Unfortunately, some studies suggest that earnings management has a negative relationship with investment sustainability in GCC countries. Companies demand assurance from the practices of their managers to reduce agency cost and information asymmetry. When audit quality was tested on the investment sustainability in GCC countries, there was a significantly positive result with high co-efficiency. Therefore, big audit firms are highly recommended companies with highest rate of sustainability.

Based on the above discussion, this study examines whether the earnings management and audit quality can accommodate the trends of sustainable investment opportunities. Therefore, the present study extends the work of Abdeljawad, Oweidat, and Saleh (2020) on sustainable investment opportunities through the influences of earnings management (direct impact) and audit quality (indirect impact). Audit quality and well-monitored earnings management are important tools in reporting of a healthy financial status of companies and this will attract investment and interest of shareholders and managers (Louis, 2004).

Along this line, the present study fills the gaps in research on sustainable investment by meeting the following objectives:

- Investigate the impacts of earnings management on sustainable investment opportunities.
- Investigate the impacts of audit quality on sustainable investment opportunities.
- Identify the moderating role of auditor quality between earnings management and sustainable investment opportunities in GCC countries.

There is a scarcity of research on sustainable investment opportunities in the GCC nations, since the GCC markets are expected to respond differently due to the unique market features compared to other emerging and developed countries. As a result, it is critical to comprehend the significance of earnings management and the audit quality procedure that can impact sustainable investment opportunities. This is one of the first studies to look at the combined influence of firm-level factors. While prior studies have focused on the influence of external governance measures, the drivers of sustainable investment opportunities have received less consideration. Furthermore, from an academic standpoint, this study contributes to the existing literature on the determinants of sustainable investment opportunities in GCC countries by employing a complementary, multi-theoretical perspective that includes agency theory which comprehend the impact of study variables. This will contribute to a better scholarly and practical knowledge of the crucial implications on long-term investment prospects. According to the argument above this study will examine the following theoretical framework.

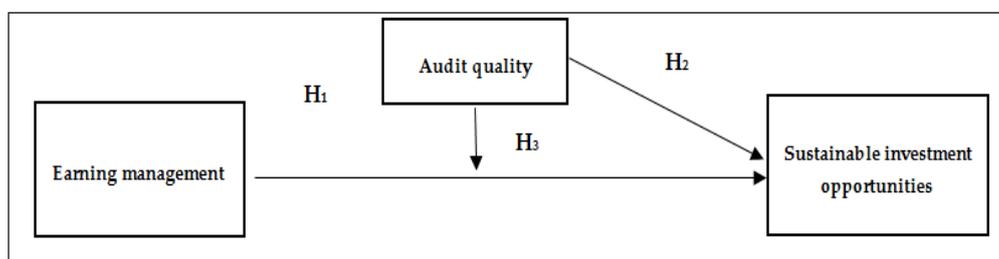


Figure 1. Theoretical framework.

The Figure 1 explains the theoretical framework of the current study. The H₁ explains the direct relationship between the earning management and sustainable investment opportunities. The H₂ explains the direct relationship between the audit quality and sustainable investment opportunities. Finally, the H₃ explains the moderating effect of audit quality on earning management and relationship of sustainable investment opportunities. The rest of the paper has different sections. A profile of the GCC countries is presented first that is followed by a literature review and hypothesis development. Section 4 is research methodology. Section 5 is the results and discussion. Finally, the conclusion, implication and future research in section 6.

2. The Gulf Cooperation Council (GCC) Countries Profile

The Gulf Cooperation Council (GCC), comprising of six Arab countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates), was founded in November 1981 with the primary objective of fostering cooperation ranging from various aspects, including commerce, culture, and education. They adopted equivalent policies and regulations in order to form a union (Amico, 2014). The GCC nations are critical supporters of the globalized economy because of their immense contribution to fuel production and that is the reason they are vital players of global political system. (Wilson, 2009). However, countries in the GCC have inadequate investor protection, inefficient legitimate mechanisms, stock market fragility, lack of high-quality information, economic instability, and governmental intervention (Reed, 2002). In terms of differences between the GCC and other emerging nations, the GCC financial markets are characterized by a low number of listed

companies, a strong connection to international markets, and a high degree of diversification (Yu & Hassan, 2008). In comparison to other emerging nations, GCC corporations have a dearth of independent directors on their boards (Ferrarini & Filippelli, 2015). Additionally, institutional investors are underrated in the market in comparison to other emerging nations such as Malaysia (Kiel & Nicholson, 2003). This aggravates the market's unreliability, since retail share-holders have a greater propensity to withdraw their money abruptly, reducing the quality of the price (Amico, 2014).

Additionally, the ownership in the GCC is harmed because it is protected by different groups such as the state and upper-class groups (Sourial, 2004), prominent parties such as elite society which leads to , favoritism in hiring and promotions (Mazaheri, 2013). Therefore, Held and Ulrichsen (2013) documented that many firms in the GCC have boards of directors, which may impair the efficiency of corporate governance performance (Ali, Chen, & Radhakrishnan, 2007) and management monitoring (Fich & Shivdasani, 2006). As a result, a holistic view of corporate governance practices and their impacts on earnings management is critical for promoting investors' prospects, especially international and minority investors, in the MENA (Middle East and North Africa) region's financial and commercial center. Corporate governance is a strong mechanism because it provides lower financial manipulations to the investors that increases their confidence in the market, as this region influences the global economy through its vast oil reserves (specifically, 40% of global oil reserves) and is a significant player in the international political system.

The GCC countries have some variations and similarities in terms of corporate governance. In 2002, Oman became the first country that issue a corporate governance code. Then, Saudi Arabia (2006), the United Arab Emirates (2007), and Qatar (2009), followed by Kuwait and Bahrain (2010). In 2016, the dates of issuance for all countries, Oman, the United Arab Emirates, and Kuwait, were amended. Saudi Arabia in 2017, Qatar in 2018, and Bahrain in 2019. Except for Saudi Arabia, all countries have a primary source of code CG Code (Corporate Governance), CG regulations. In other nations, the capital market is the issuance entity.

Furthermore, the legal actions are mandatory in Oman, Saudi Arabia, and the United Arab Emirates, whereas Qatar, Kuwait, and Bahrain are subjected to inspection. Those codes have a similar process in some place, such as monitoring financial statement integrity, internal audit effectiveness, and proposing the hiring of high-quality external auditors. In addition, the Oman and Qatar codes both recommend rotating auditors every four and three years, respectively. Saudi Arabia, the United Arab Emirates, Kuwait, and Bahrain are omitted.

3. Literature Review and Hypothesis Development

Agency theory of Jensen and Meckling (1976) is followed, where managers have more information than investors which causes a rise in information asymmetry and agency problems. These problems lead to low efficiency of resources allocation in the market. Moreover, this leads to managers being more focused on short term goals rather than on long-term and this will influence the long-term investment of sustainability for shareholders (Alsayegh et al., 2020). Managers can manipulate their earnings by the control given them (Rahman & Ali, 2006). They do this because the investors do rely on financial statements where all their investment decisions have been made. This will influence the development goals of sustainability and economy in the long run as it also contradicts with the World Commission on Environment and Development (CED). In line, Porter and Kramer (2019) p.3 argued and supported that "Achieving sustainable development goals require important investments". Thus, controlling the opportunistic behaviors of these managers will help them to improve the investment sustainability on not just at firm level, but on an economic level as well. Kramer and Porter (2011); Porter and Kramer (2019) states that creating values for the companies is based on the concept of corporate shared value theory which means that the adoption of policies and corporate practices will contribute in maximizing the economic values of the companies as well as their social aspirations. Thus, monitoring the mechanisms within the companies are crucial for the investors' rights. In this regard, governance mechanisms such as audit quality will mitigate information of low quality and asymmetric information and agency problems (Jensen & Meckling, 1976). Investors will have higher confidence in these companies as their risks would be lower. Alsayegh et al. (2020) stated that this can positively affect investment sustainability. The following section discusses the hypothesis development for the study, built on agency theory perspective.

3.1. Earning Management and Sustainable Investment Opportunities

Sustainable investment is one of the financial components of corporate construction that enhances and measures the sustainability growth as well as the values of shareholders (Alsayegh et al., 2020). GCC countries encourage the management companies towards the sustainability information in their financial reports, which may attract more investors (AlNaimi, Hossain, & Momin, 2012; Khasharmeh & Desoky, 2013). In response to the economic challenges and threat of scarce oil resources in the current and future times, Momani (2008) stated that the GCC countries have paid more attention to their investors' concerns on investment decisions (Garas & ElMassah, 2018; Issa & Fang, 2019; Platonova, Asutay, Dixon, & Mohammad, 2018). Thus, managers come up with better strategies to increase investment sustainability and meet social aspiration (Alhowaish, 2016; Connelly & Xydis, 2021; Fatima et al., 2022).

Managers have more information regarding the subject matter as compared to the shareholders, which leads to information asymmetry. Jensen and Meckling (1976) stated that these managers could use different accrual

accounting policies to manage the company's recorded earnings in their financial statements (Healy & Wahlen, 1999). When investors try to use financial statements to assess a specific sustainability of company, (Piotroski, 2000) they end up viewing pieces of information that have been altered in accounting standards by the managers, who are opportunistically motivated (Healy & Wahlen, 1999). Therefore, by using earnings management activities to their own interest and benefits, these managers affect the investments of others (Rahman & Ali, 2006). Thus, earnings management may have a negative effect on the resource allocation of companies (Healy & Wahlen, 1999) and their investment sustainability (Samet & Jarboui, 2017; Shahzad, Rehman, Nawaz, & Nawab, 2018). In this regard, several investigations have concluded that earnings management brings a negative effect on investments (Bzeouich, Lakhali, & Dammak, 2019; Huang & Li, 2016). Hence, this study formulates the following hypothesis to test the relationship between earnings management and investment sustainability.

Hypothesis 1 (H₁): Earnings management has a significantly negative relationship with sustainable investment opportunities in GCC countries.

3.2. Audit Quality and Sustainable Investment Opportunities

Schwartz (1997) argued that liability payments by audit firms create higher incentives for them to work harder. The author also argued that liability payment assures quality services on the credibility of financial statements, in which the investors are using to make an investment. Moreover, the previous studies supported that big audit firms normally provide a higher quality audits activities than smaller firms. (Davidson & Neu, 1993; DeAngelo, 1981; Sundgren & Svanström, 2013), which have been supported by other research conducted in diverse sectors and countries (Francis & Yu, 2009; Li, Song, & Wong, 2008).

According to economic theory, the characteristics of the inefficient market are the publicly available information that doesn't reflect the true value of the firms and the higher information asymmetry that leads to inefficient investment projects (Jensen & Meckling, 1976). This leads to managers using company information for their own benefits (Myers & Majluf, 1984) which may cause a higher risk in investment (Shahzad, Rehman, Hanif, Asim, & Baig, 2019). Based on the resource-based view, companies assume that having more access to resources will eventually assist them to have a competitive advantage and increases the outcome of their performance at a higher level (Shahzad et al., 2019). Moreover, companies appoint big audit firms will have unique audit activities such as complex risk assessment and assigning professional auditors with high quality standards that can help them to perform quality audit. Therefore, companies will have more reliable financial statements (Davidson & Neu, 1993; DeAngelo, 1981; Sundgren & Svanström, 2013). This leads to the lowering of information asymmetry and a higher control over the managers to reduce their opportunistic behaviors (Jensen & Meckling, 1976). Moreover, firms having quality audit reduce the high cost of capital investors demand when investing in the companies (Baker & Al-Thuneibat, 2011) which could have a positive effect on sustainable investment opportunities.

In this regard, Bedard and Johnstone (2004) argued that one of the most important tasks by the auditors is to evaluate the investment and financing risks of firms, which supported the argument by (Shrivastava, 1995). Thus, audit quality plays an important role in higher investment opportunities (Lai, 2009) and affects the companies' investment sustainability. Boubaker, Houcine, Ftiti, and Masri (2018) investigated the relationship between investment efficiency and audit quality. They found in their study that audit quality is positively affecting companies' investment efficiency. Moreover, Badavar Nahandi and Taghizadeh Khanqah (2013) in their study on audit quality and investment efficiency from Tehran Stock Exchange found that a significantly positive relationship between audit quality and investment efficiency. Hence, present study formulates the following hypothesis to test the relationship between audit quality and sustainable investment opportunities:

Hypothesis 2 (H₂): Audit quality has a significantly positive relationship with sustainable investment opportunities in GCC countries.

3.3. The Moderating Effect of Audit Quality between Earnings Management and Sustainable Investment Opportunities

Jensen and Meckling (1976) argued that managers know more information about the companies than the shareholders, which contributes towards information asymmetry problem. Thus, the information asymmetry problem helps the managers to exercise more opportunistic behavior and earning management practices (Myers, Myers, & Omer, 2003), such as using accruals to attract more investors and increase their compensation. In addition, the managers will also use the company's resources such as the cash flow inefficiently and will lower resource allocations (Shahzad et al., 2019). In this regard, when companies are involved in social responsibilities and have higher concerns about their investment sustainability in the current and future times. Sahut, Peris-Ortiz and Teulon (2019) stated that more control mechanisms were required to monitor the managers' behaviors. Lai (2009) argued that audit quality is a good governance mechanism that will mitigate these behaviors and achieve a better resource allocation, which in return causes higher investment sustainability. This recommendation has been directly tested on investment efficiency and resulted in positive effects (Boubaker et al., 2018). Several other studies also concluded the positive effects of audit quality in decreasing earnings management (Ngo & Le, 2021).

In this regard, the company appoint big four audit firms will have a good governance mechanisms that mitigate the information asymmetry and mitigate the earning management practices, which in return causes

sustainable investment opportunities (Shahzad et al., 2019). This argument is supported by another study used in an emerging market such as Korean evidence (Jeong & Choi, 2019). In addition, the big audit firms have a higher control on managers and in return benefits the shareholders and societies (Hammami & Hendijani Zadeh, 2020) especially when the managers can use the companies' resources to achieve investment sustainability. This is because, when companies appoint the big four audit firms, the auditors will work hard to make sure the managers make better decisions for investment sustainability and reduce agency problems such as asymmetric information and monopolistic behaviors by the managers. Thus, this study formulates the following hypothesis:

Hypothesis 3 (H₃): Audit quality moderates the relationship between the earnings management and sustainable investment opportunities in GCC countries.

4. Research Methodology

4.1. Study Sample

The present study uses the data of companies listed in the GCC countries: Qatar, Saudi Arabia, Bahrain, Oman, United Arab Emirates and Kuwait. The data is collected from companies' websites and from various databases. The present study uses 191 listed firms from GCC countries from 2011-2017. The period of 2011 to 2017 is chosen because there was a continuous decreasing trend of firms' instability due to weak macro-economic factors such as, political instability, attaining appropriate structural transformation, youth unemployment challenges and labor market imbalances. Several other criteria were considered to obtain the final sample. The banks and insurance entities were excluded due to different regulations by respective countries. Suspended companies and companies with incomplete information in those countries' stock exchange were also excluded from the data sample.

Table 1 shows the final data sample used in this study. According to the databases, there are several diversifications among the countries' market such as CONSD, CONSS, ENER, INDUS, INFOR, MATER, TELECOM and UTILI, which are explained in Appendix A. Table 2 shows a total number of 191 companies, in terms of percentage (from the highest to the lowest). Saudi Arabia (KSA) 36%, Oman (OMN) 34%, United Arab Emirates (UAE) 13%, Qatar (QAT) 7.3%, Kuwait (KUW) 4.7% and Bahrain (BAH) 4.7%. These percentages from the respective countries are based on the availability of the fundamental variables in the "Gulfbase" databases and on the companies' websites.

4.2. Variables Definitions and the Study Empirical Models

The sustainable investment opportunities (INVS) is the dependent variable that is used in Equation 1 and Equation 2 which is measured by the (total assets + market value of equity - the book value of equity) / total assets (Abdeljawad et al., 2020). The market value of equity is measured by the Number of Outstanding shares × Price per share (Abdeljawad et al., 2020). As discussed above, these countries have been threatened by the scarcity of resources. Thus, it encourages these companies to achieve a sustainable investment which requires a higher opportunity growth to achieve community aspirations (Alhowaish, 2016). The investment strategy has a financial component that measures value creation for shareholders, Alsayegh et al. (2020) which the investors evaluate by referring to the CSR (Corporate Social Responsibility). However, to compare the market value of a company with its existing assets is a good scale for investment, growth and sustainability. Scholars argued that earnings management happens when the managers exercise their opportunistic behaviors and chose different accounting methods, assumptions and estimations when preparing their financial statements. This affects the investment decisions of other investors and shareholders. In this regard, Dechow and Dichev (2002) stated that the nondiscretionary accruals and the managers' opportunistic behaviors influence the discretionary accruals. The accrual process is not flawless and has different estimations, as stated by Dechow and Dichev (2002). Also, managers' opportunistic motivation affects the accruals and increases the accrual process (Healy & Wahlen, 1999). De Meyere, Vander Bauwhede, and Van Cauwenberge (2018) stated that the following model is a more reliable measurement of accruals. All variables in the model are scaled by the average total of assets of the companies per year to capture the heteroscedasticity problem:

$$\Delta WC_{i,t} = \gamma_0 + \gamma_1 CFO_{i,t-1} + \gamma_2 CFO_{i,t} + \gamma_3 CFO_{i,t+1} + \gamma_4 \Delta sales_{i,t} + \gamma_5 PPE_{i,t} + \epsilon_{i,t}$$

Where,

(I, t) = company I, year t.

$\Delta WC_{i,t}$ = the change in non-cash working capital in year t.

$CFO_{i,t}$ = the cash flow from operations in years t.

$\Delta sales_{i,t}$ = the change in net sales in year t.

$PPE_{i,t}$ = the gross value of property, plant and equipment in year t.

Table 1. Sample distribution

Country/ Sample	CONSD	CONSS	ENERG	HEALT	INDUS	INFOR	MATER	TELEC	UTILI	Total	Percentage
	1	2	3	4	5	6	7	8	9	Obs. (Com)	
KSA	91	70	28	14	63	0	182	21	14	483 (69)	36%
OMN	70	119	28	7	91	7	98	7	28	455 (65)	34%
UAE	21	28	7	14	63	0	21	14	7	175 (25)	13%
QAT	0	7	21	7	28	0	21	7	7	98 (14)	7.30%
KUW	7	0	0	0	21	7	28	0	0	63 (9)	4.70%
BAH	28	14	0	0	7	0	7	7	0	63 (9)	4.70%
Total subsample	217 (31)	238 (34)	84 (12)	42 (6)	273 (39)	14 (2)	357 (51)	56 (8)	56 (8)	1337 (191)	100%
Percentage	16%	17%	6.20%	3.10%	20%	1%	26%	4.10%	4.10%	100%	191 Companies

The study has two independent variables, namely the earnings management and audit quality. Many previous studies have supported that earnings management and audit quality has a significant effect on sustainable investment opportunities. Some studies have used several other methods to measure audit quality, such as specialization and expertise as stated by Solomon, Shields, and Whittington (1999) auditor industry expertise by Cameran, Prencipe, and Trombetta (2016) the big audit firms by Harris and Williams (2020). Thus, due to the unavailability of other measurements of component data, this study uses the big audit firms to measure the audit quality.

Several control variables that were demonstrated to have a significant link with sustainable investment opportunities in earlier research were included in the regression analysis. The firms' size and companies' leverages are included in the models. The firms' size is measured by the natural logarithms of the companies' total assets, where large companies are said to have an advantage over smaller companies which enhance their future sustainability (Zhai & Wang, 2016). The companies' leverages are measured by the total liabilities divided by the shareholders' equity and is presented as an important control variable, as used in previous studies to control finances (Zhai & Wang, 2016). This is where the companies have higher liabilities that forces managers to spend their cash resources to increase the value of their investments within the companies. According to other researchers, Bradshaw, Liao, and Ma (2019) past performances that were measured by return on assets, could affect the future investment sustainability within those firms. Thus, the study pivoted its years for ROA (Return of Assets). Finally, the standard deviation of the revenue is also included in these models, which will affect future investments and which will attract more investors (De Meyere et al., 2018).

This study incorporated two models to examine and validate the study objectives. Model 1 uses Panel Data Ordinary Least Squares with Correlated Random Effect as suggested by Hausman Test to examine the direct relationship between the independent variables such as earnings management and audit quality as well as the dependent variable, sustainable investment opportunities (*INVS*), to test the hypotheses H1 and H2 in the following Equation 1:

$$\Delta INVS_{i,t} = \beta_0 + \beta_1 EM_{i,t} + \beta_2 AQ_{i,t} + \beta_3 \Delta ROA_{t-1} + \beta_4 \Delta ROA_{t-2} + \beta_5 LEVE_{i,t} + \beta_6 \text{Log}(ASSET)_{i,t} + \beta_7 SDRV_{i,t} + \epsilon_{i,t} \quad (1)$$

INVS = (Total assets + market value of equity – book value of equity)/ total assets.

EM = Earning Management.

AQ (*Audit Quality*) = Dummy (1 if the audit firms are one of the big audit firms and 0 otherwise).

ROA = Return of assets.

LEVE = Leverage.

Asset = Total assets.

SDRV = 3-period standard deviation of revenue.

Then, the study uses the moderated multiple regression to examine the moderating effects of audit quality on the earnings management and sustainable investment opportunities relationship, which validates the H3 under the study. Thus, an adjustment is made to Model 1 in Equation 1 by inserting $\beta_3(EM_{i,t} * AQ_{i,t})$ to Equation 2 as follows:

$$\Delta INVS_{i,t} = \beta_0 + \beta_1 EM_{i,t} + \beta_2 AQ_{i,t} + \beta_3 (EM_{i,t} * AQ_{i,t}) + \beta_4 \Delta ROA_{t-1} + \beta_5 \Delta ROA_{t-2} + \beta_6 LEVE_{i,t} + \beta_7 \text{Log}(ASSET)_{i,t} + \beta_8 SDRV_{i,t} + \epsilon_{i,t} \quad (2)$$

5. Results and Discussion

5.1. Diagnostics Test

Regression analysis and its assumptions are tested before interpreting the results. The normality of the errors in Model 1 and Model 2 was investigated using the Jarque-Bera test. The results confirmed that the errors were normally distributed at less than 5% significant level. In accordance with De Meyere et al. (2018) the study avoided outliers of all variables at the 1st and 99th percentiles. The descriptive analysis in Table 2 confirmed that the data had no outliers. In addition, the study investigated the multicollinearity using the variance inflation factor (VIF) which should be less than 10 as shown in Tables 4 & 5, and that Table 3 confirmed that there are no multicollinearity problems.

5.2. Descriptive Analysis and Correlation Matrix

The descriptive analysis is used for the core variables that are shown in Table 2. The outcome of this study demonstrates that the sustainable investment opportunities (*INVS*) in the GCC region vary between the minimum and maximum values (0.01) and (7.73), respectively. These results explain the wide range of the data sample as well as the acceptable range compared to the other studies, Alhawaish (2016) with minimum and maximum values: (0.12) and (7.22), respectively, causing a sustainable economic growth in GCC countries. In addition, the earning management proxy (*EM*) shows the range from minimum and maximum values: (-5.51) and (8.50), respectively. This means that the earnings management practices could have a positive and negative effect, namely because of the opportunistic behaviors by the managers that could affect companies and their investment sustainability where there is no control mechanism in place. The audit quality measurement is a dummy variable; 1 indicates appointment of big audit firm and 0 if otherwise.

The control variables are inserted in the models to control the heterogeneity that have a return on assets lagged for t-1 and t-2, which shows the minimum and maximum value. It ranges between 0.26 and -0.49, respectively. Thus, the $\Delta ROA_{i,t-1}$ and $\Delta ROA_{i,t-2}$ could have a significantly positive and negative effect on sustainable investment opportunities. Moreover, the Leverage (LEVE) measured by the total liabilities divided by the total shareholders' equity explains the financial risk that could affect the models' estimation, which ranges between -30.17 and 26.32 respectively. These results are similar to other investigations that have been conducted in the GCC region (Alsayegh et al., 2020). Finally, the natural logarithm of total assets $LOG(ASSET)$ and the standard deviation of revenue $SDRV_{i,t}$, was explained in the table, which shows the sizes of the companies, (proxy: $LOG(ASSET)$) range value with the minimum and maximum between 1.18 and 11.55, which is similar to the studies of Zaidan et al. (2019). The standard deviation of revenue could have an effect on the sustainable investment opportunities which shows minimum and maximum range values, -4.83 and 9.16, respectively.

Table 2. Descriptive statistics.

Variables	Mean	Median	Maximum	Minimum	Std. dev.	Observations
INVS	1.380	1.200	7.730	0.010	0.790	1323.00
EM	2.260	2.100	8.500	-5.510	1.920	935.00
AQ	0.290	0.000	1.000	0.000	0.450	1329.00
ΔROA	-0.070	-0.060	0.350	-0.490	0.090	1233.00
LEVE	0.690	0.320	26.320	-30.170	2.110	1334.00
$LOG(ASSET)$	5.820	5.840	11.550	1.180	1.900	1328.00
SDRV	2.920	3.000	9.160	-4.830	2.030	1166.00

Table 3 is the correlation matrix which supports the independent variables under the study. When the correlation among the independent variables is less than 0.72, no multicollinearity regression problems exist. Moreover, result shows a negative sign between the earnings management and sustainable investment opportunities, which will be further investigated in the regression section.

Table 3. Correlation matrix.

Variables	INVS	EM	AQ	ΔROA_{t-1}	ΔROA_{t-2}	LEVE	Log (ASSET)	SDRV
INVS	1.000							
EM	-0.040	1.000						
AQ	0.006	-0.123	1.000					
ΔROA_{t-1}	-0.040	0.000	0.034	1.000				
ΔROA_{t-2}	-0.349	0.050	0.149	0.614	1.000			
LEVE	-0.102	0.071	-0.058	-0.057	0.074	1.000		
$LOG(ASSET)$	-0.062	0.569	-0.145	0.015	0.076	0.143	1.000	0.621
SDRV	-0.005	0.569	-0.128	0.017	0.046	0.093	0.621	1.000

5.3. Regression Analysis

5.3.1. Direct Relationship between Earnings Management and Audit Quality

Table 4 provides the regression analysis of Model 1, which investigates the direct relationship between earnings management practices and audit quality on sustainable investment opportunities in GCC countries. The Model 1 tests Hypothesis (H1) and (H2). (H1) examines the relationship between the earnings management and sustainable investment opportunities in GCC countries. (H2) examines the relationship between audit quality and sustainable investment opportunities in GCC countries. The model has a good fit and model accuracy with R2, which is 52%, thus similar to the studies of Alsayegh et al. (2020).

The result of (H1) shows a negative coefficient at a level less than 10% (-3.09, p=0.08). This finding enables us to prove the presence of a negative and statistically significant association between earnings management and sustainable investment opportunities at the 10% level. The results above show the quality of the findings that enhances the intensity of investment in securities in the context of the GCC countries. Indeed, firms that participate in earnings management operations provide investors with greater investment options. Additionally, earnings management degrades the quality of results reported to the financial markets, resulting in a significant level of information asymmetry and, as a consequence, a reduction in sustainable investment opportunities. This demonstrates that improving the quality of information is critical for the GCC markets' overall development and for sustaining its investment and growth.

Further, the results support the agency theory argument that managers have more information about the firms than the shareholders, resulting in an information asymmetry problem, as described by Jensen and

Meckling (1976). As a result, the earning management techniques reduce the credibility of the financial statements (Healy & Wahlen, 1999), which investors use to assess organizations for the long term (Piotroski, 2000). Hence, earning management has a detrimental impact on investors' investments and market stability (Rahman & Ali, 2006). The findings of this study were consistent with another previous study conducted by Bzeouich et al. (2019). This reinforced the claim that earning management negatively impacts how resources are allocated and, consequently, on chances for sustainable investment.

In addition, testing the relationship between the audit quality and sustainable investment opportunities in Model 1 and hypotheses (H2), the results show a positive coefficient at a level less than 1% (0.08, p=<0.01). The result indicates that audit quality has a positive impact on the dependent variable sustainable investment opportunities because it improves the transparency of financial statements, which enhances the auditors' role in performing their duties. Thus, a high-quality audit implies that investors may fine-tune their investment decisions based on the audit opinion, since this view has informational value and can result in investment efficiency. Additionally, effective audit quality mechanisms assist management in developing the correct vision, therefore increasing the efficiency of their investment selections and alternatives.

This finding is also backed by the agency theory argument that better governance systems can minimize agency costs and lessen the information asymmetry (Jensen & Meckling, 1976). Large audit firms also have unique resources, such as better risk assessment skills and experienced auditors, which enable them to conduct high-quality audits (Samet & Jarboui, 2017). This logic decreases opportunistic behaviors by reducing knowledge asymmetry and increasing managerial control (Jensen & Meckling, 1976). Based on above discussion, it is argued that audit quality corporations reduce investors' risk by allowing them to invest more in the companies, and potentially boosting investment sustainability. The similar results were found by other studies such as Boubaker et al. (2018); Shahzad et al. (2019).

Finally, the control variables under Models 1 and 2 in the following section yields the same results. Changes in assets' return in t-1 and t-2, for example, have a substantial association with GCC sustainable investment opportunities. Similar findings were observed by Bradshaw et al. (2019) who discovered that the preceding two years' returns had a negative influence, while the first year's return had a positive one. The study includes leverage, which is calculated by dividing the total liability by the total shareholders' equity. It is claimed that companies with a large financial load are more likely to lose market share. However, a significant level was not found, possibly because of the low leverage in those firms. The firm size is assessed by the natural logarithm and it has a positive coefficient with the sustainable investment opportunities at a level less than 5% (1.72, p=<0.05), implying that companies with larger assets have more power to achieve a sustainable investment and implement better operations (Alsayegh et al., 2020). Finally, with a sustainable investment opportunity, the standard deviation of revenue shows a positive coefficient at a level smaller than 1% (6.3, p=<0.01).

Table 4. Result of panel data analyses.

Independent variables	Coefficient	Std. error	t-statistic	Prob.	VIF
EM	-3.0905	1.9005	-1.6279	0.0839*	1.6780
AQ	0.0847	0.0236	3.5851	0.0004***	1.0546
ΔROA_{t-1}	5.1343	0.3932	13.055	0.0***	1.6518
ΔROA_{t-2}	-4.5036	0.1628	-27.647	0.0***	1.7753
LEVE	-0.0033	0.0036	-0.9112	0.3624	1.0907
LOG(ASSET)	1.7206	7.60-07	2.2682	0.0236***	1.8341
SDRV	6.3005	1.7805	3.5411	0.0004***	1.7994
C	1.0617	0.0149	71.220	0.0***	

Note: ***Indicates significant level at 1% and * indicates significant level at 10%.

5.3.2. Moderating Effects of Audit Quality

The hypothesis (H3) test is presented in Table 5. Table 5 also shows the regression findings of Model 2 for the moderation effects of audit quality on the relationship between earnings management and sustainable

investment opportunities. In this model, the interaction term $(EM_{i,t} * AQ_{i,t})$ is used to update Model 1, which has a goodness of fit (model accuracy) of R2, 52% percent. Similar results are found in Model 1 and 2 regarding the direct effect of earnings management and audit quality relationship with sustainable investment opportunities. However, with a coefficient level less than 5% (0.0, p=0.05), the interaction effect of audit quality on earnings management and sustainable investment opportunities flips the earnings management from a negative to a significantly positive effect. Additionally, the current results support the earlier finding and confirm the positive direct relationship between audit quality and sustainable investment opportunities with a coefficient level of less than 1% (0.0, p=0.01).

Audit firms have developed extensive knowledge and skills in their niche because of their demand in this sector (Sun & Liu, 2011). Cahan, Godfrey, Hamilton, and Jeter (2008) anticipated that the attractiveness of specialization would be directly proportional to the amount of industry-specific knowledge that is required to complete the audit, and that these specifications are likely to vary across industries, therefore they affect

sustainable investment opportunities. As a result, it is suggested that when experts conduct audits, they are assumed to have a greater depth of knowledge than non-specialists due to their skill and experience in a specific area, and it puts them in a better position to make sound audit conclusions (Bierstaker, Bedard, & Biggs, 1999). Additionally, Solomon et al. (1999) suggest that industry professionals are capable of producing higher-quality audit work. The result is supported by the agency theory, i.e., good governance helps to mitigate the agency problem and lowers agency cost and information asymmetry (Jensen & Meckling, 1976). Lai (2009) asserted that audit quality is a solid governance instrument that will minimize opportunistic managers' conduct and promote better resource allocation, resulting in higher sustainable investment opportunities. Thus, the audit quality plays a vital role in alleviating the cunning behavior of managers and better health for companies' future sustainable investment opportunities.

Table 5. Result of ordinary least square (Including moderation).

Independent variables	Coefficient	Std. error	T-statistic	Prob.	VIF
<i>EM</i>	-0.000	0.000	-1.877	0.041**	2.7577
<i>AQ</i>	0.088	0.024	3.716	0.000***	1.0542
$(EM_{i,t} * AQ_{i,t})$	0.000	0.000	1.652	0.049**	2.5018
$\Delta ROA_{i,t-1}$	5.183	0.394	13.148	0.000***	1.6859
$\Delta ROA_{i,t-2}$	-4.502	0.163	-27.579	0.000***	1.7918
<i>LEVE</i>	-0.004	0.004	-0.989	0.323	1.0811
<i>LOG(ASS)</i>	0.000	0.000	2.664	0.008***	2.2274
$STRV_{i,t}$	0.000	0.000	4.793	0.000***	5.4677
<i>C</i>	1.058	0.015	71.224	0.000***	

Note: ***Indicates significant level at 1%, **indicates significant level at 5% and * indicates significant level at 10%.

6. Conclusion

This study examined the direct effect of earnings management and audit quality on sustainable investment opportunities throughout the GCC, encompassing Bahrain, Qatar, Oman, Saudi Arabia, United Arab Emirates, and Kuwait. The study's data set comprises of 1337 company-year observations between 2011 and 2017. In addition, the study investigates the moderating effect of audit quality on the relationship between earnings management and sustainable investment opportunities. The findings indicate that earnings management has a strong negative correlation with sustainable investment opportunities. Additionally, the empirical evidence revealed a significantly positive relationship between audit quality and sustainable investment opportunities. Also, audit quality plays a moderating role and changes the negative effect of earning management, suggesting that audit quality is critical for minimizing the agency theory issue and lowering information asymmetry. These results show that the large audit firms serve as a strong governance representative for management, further boosting the accounting information's credibility for investors. The empirical evidence in this research corroborates with the agency theory notion that earnings management practices have a negative influence on a firm's sustainable investment opportunities. Additionally, the agency theory argument that "audit quality mitigates the information asymmetry problem", in which managers have more knowledge than investors, is affirmed. Hence, this research discovers that audit quality, as measured by the large audit firms, plays a critical role in minimizing the agency theory and reversing the negative effects on sustainable investment opportunities.

6.1. Implication of the Study

This research has a number of implications for policymakers and investors (current and prospective) in the GCC areas. The first implication is that, investors should assess their choice when investing in firms with the understanding that the hypothesized earnings may not be legitimate and it may impact their decision for sustainable investment opportunities. Such assessments are crucial for investors as it may happen that investors would invest in a firm and later they will discover that its performance fell short of their expectations (Dechow, Ge, & Schrand, 2010). Investors should put their money into GCC firms that are more focused and they have sufficient governance measures to minimize accruals and earnings management.

The second implication is that GCC companies should be aware that big auditing firms mitigate earnings management, which may raise sustainable investment opportunities. The GCC companies may use the resident big-4 auditing firms to help them in establishing their reputation in their local markets. Thirdly, listed firms in the GCC should implement governance and disclosure practices that strengthen the credibility of financial earnings and thus it reduces the danger of poor investment decisions. Thus, this practice lowers their engagement in earnings management and enhances prospects for sustainable investment opportunities.

6.2. Limitation and Future Research

This research has several limitations such as the small number of companies were taken as samples for this study as well as some other variables are employed which provide sustainable investment opportunities in GCC countries. Some previous researches of Lin and Hwang (2010) and Chen, Lin, and Zhou (2005), used audit fees, auditor tenure, and industry specialized auditor as proxies for audit quality. However, this study used a dummy scale to assess audit quality in GCC countries. Therefore, future studies may use those proxy to measure the audit quality as suggested by Habbash and Alghamdi (2017). Additionally, this research studied the influence of audit quality on the interplay between earnings management and sustainable investment opportunities. Additional governance variables at the firm and country level (Al-Haddad & Whittington, 2019; Piosik & Genge, 2019) may be utilized to explain the relevance of earnings management and sustainable investment opportunities. Finally, this research recommends that GCC countries make sustainability disclosure obligatory, since this would help the countries to attract more socially responsible investment.

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Appendix A. Companies' sectors under the study sample.

Section symbol	Sectors classification: Sectors covered in the study
CONSD	Industrial investment, hospitality development of cinemas, media, advertising, duty free, leisure, education, tourism, air conditioning & home appliances device, marketing, retail, hotels, diversified retail and distribution, automotive services company and luxury products.
CONSS	Agricultural, and mineral water, poultry, biscuit, flour mills, detergent, refreshment, food, fish farming and fisheries cattle feed.
ENERG	Helicopter transportation services and catering services, renaissance productions projects, refining & petrochemical, shipping services for crude oil; insurance and reinsurance, drilling and associated services, petroleum products; gas, fuel and oil.
INDUS	Power transmission line conductors and building wires, port services, engineering, assembly, cables, courier and package delivery, warehousing, automotive distribution, ceramic tiles, abrasives manufacturing, real estate, power generation, ceramic and porcelain wall and floor tiles, rail & infrastructure, maritime, vitrified clay pipe, consist aviation, air services, aviation lease and finance, construction and landscapes, manufacturers of voltage power cables, transportation, printing and packaging, construction, development,
INFOR	Automated systems and fiber optic.
MATER	Aluminum products, mining, wire factories, filling & packing materials manufacturing, metal manufacturing & casting, construction materials industries & contracting, building materials, aluminum, cement, petrochemical, leading producer & trader of aggregates, steel products, real estate, chemicals, gases and manufacturing of building materials.
TELEC	Telecommunications.
UTILI	Electricity & water, industrial services and national energy.