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Enhancing Audit Quality Through Audit Consortium:

Evidence from the MENA Region

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Abstract

Purpose – The study attempts to examine the impact of audit consortium, both joint and dual, on audit quality assessment in the MENA Region.

Design/methodology/approach – A deductive and quantitative study is conducted using secondary data collected from annual reports of the most active companies listed in Mena Region countries, including Egypt, Saudi Arabia, United Arab Emirates, Qatar, Kuwait, Jordan, Iraq, Iran, Algeria, Oman, Yemen, Morocco, Tunisia, Lebanon, Bahrain, Syria, Libya, Djibouti, Palestine, and Sudan. The study included the period from 2016 to 2023, where these countries faced several crises, such as COVID-19 pandemic as well as several political and economic events, specifically floating and shocks of fluctuations in inflation and exchange rates. Correlation and GLS regression analyses were conducted as well as fixed versus random effects were tested using Hausman test.

Findings – The results proved that joint audit existence, joint auditors Big4, joint auditors affiliate, dual audit existence, dual auditors Big4, and dual auditors affiliate had a significant positive influence on Audit Opinion.

Practical implications – The study's conclusions have some consequences for multiple stakeholders, including policymakers, regulators, audit firms, investors, and corporate executives. Moreover, the suggestions collected through the investigation can inform regulatory reforms, shape auditing practices, and enhance corporate governance mechanisms in the MENA region and beyond. Moreover, shedding light on the interplay between audit consortia and audit quality investigation supports the broader literature on auditing, corporate governance, and financial reporting integrity.

Keywords – Joint audit existence; Dual audit existence; Joint auditors Big 4; Joint auditors affiliate; Dual auditors Big 4; Dual auditors affiliate; Financial Statements; Audit Quality.

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1. Introduction

The importance of audit quality evaluation has grown due to the complexity of financial reporting becoming more and more complicated, increased regulatory supervision, and greater demands for accountability and transparency (Habib and Jiang, 2015). Knowing what influences audit quality is especially essential throughout the Middle East and North Africa (MENA) area, where economic dynamism coexists with a variety of cultural settings and regulatory frameworks (Boolaky et al., 2018). Understanding the factors that impact audit quality in this region can help improve financial reporting standards and ensure the integrity of information provided to stakeholders. By identifying and addressing these influences, auditors can enhance their effectiveness and contribute to the overall trustworthiness of financial statements in the MENA region (Salem et al., 2021).

Most governance regulations in place today work to maintain the independence of external auditors from business management. As a result, shareholders view an independent auditing process as a governance tool that allows them to keep an eye on management and, therefore, the company's financial reporting process (Koutoupis et al., 2018; Manita et al., 2020).

The MENA region represents an intriguing setting for studying audit quality assessment due to several reasons. Firstly, the region encompasses a diverse spectrum of economies, ranging from oil-rich nations to emerging markets, each with its distinct characteristics and challenges. Secondly, the regulatory environment in the MENA region exhibits significant heterogeneity, reflecting varying degrees of adherence to international auditing standards and corporate governance practices. Thirdly, cultural factors, such as the importance of personal relationships and societal norms, may influence audit practices and perceptions of audit quality in ways that differ from Western contexts (Gebrayel et al., 2018).

One of the most contentious methods for raising the caliber of audits and settling several associated problems is the audit consortium for joint and dual audits (Bzuneh, 2016). A joint audit involves two audit firms working together to provide a more thorough and reliable audit of a company's financial statements. On the other hand, dual audit is a consortium where two or more independent audit firms audit different sets of a client's financial statements. By having a consortium there is increased accountability and control, leading to higher-quality audits which, in general, is expected to mitigate conflicts of interest and reduce the risk of fraud or misconduct (Habib et al., 2019, AbuRaya, 2023).

According to AbouRay (2023), most audit consortium research are conducted in developed western countries as opposed to the Middle East and North Africa (MENA) countries. Additionally, regulatory bodies may need to consider promoting or mandating this practice, like in some developed countries, to ensure widespread adoption and standardization across the region. Therefore, the MENA region needs additional research to assess the impact of joint and dual audit existence and the audit pair combination types.

The contribution of the current study may be stated in some points as the study's conclusions have consequences for multiple stakeholders, including policymakers, regulators, audit firms, investors, and corporate executives. Suggestions gathered from the investigation can inform regulatory reforms, shape auditing practices, and enhance corporate governance mechanisms in the MENA region and beyond. Moreover, by shedding light on the interplay between audit consortia and audit quality, this investigation supports the broader literature on auditing, corporate financial reporting integrity, and governance.

As a result, through an applied study on the MENA Region, the goal of the current study is to investigate the impact of Dual audit existence, Dual auditors Big4, Dual auditors affiliate, Joint audit existence, Joint auditors Big 4, Joint auditors affiliate of financial statements on audit quality as measured by audit opinion modification.

2. Literature Review

This section introduces a definition of the research variables, in addition to showing the relationship between the variables. Thus, this section is divided into four sub-sections as follows.

2.1. Institutional Settings

The Middle East and North Africa are home to a wide variety of stock markets that are essential to each country's economy (Lanchovichina et al., 2015). These marketplaces are essential hubs for investment, capital mobilization, and regional economic growth (Wilson, 2021). The Tadawul in Saudi Arabia, the Bourse de Casablanca in Morocco, Egypt's Egyptian Exchange (EGX), the Dubai Financial Market (DFM) and the United Arab Emirates' Abu Dhabi Securities Exchange (ADX), and others, are some of the major stock exchanges in MENA, or North Africa and the Middle East. These markets make it easier for people to trade stocks, bonds, and other financial products, giving investors the chance to diversify their holdings and to reach sources of funds for their companies. Moreover, the stock markets in the MENA region function as measures of economic activity (Graham et al., 2013).

Despite the region's economic dynamism and significant potential, MENA stock markets face various challenges and opportunities. One challenge is the volatility and sensitivity to geopolitical events and oil price fluctuations, given the region's reliance on hydrocarbon revenues. Additionally, regulatory frameworks and market infrastructure vary across countries, impacting market efficiency and investor confidence (Ziadat, 2019; Matallah, 2020; Mustafa, 2022). Nevertheless, ongoing reforms, technological advancements, and efforts to enhance transparency and corporate governance are fostering growth and resilience in MENA stock markets (Matallah, 2023). As governments and regulatory authorities continue to liberalize and modernize their financial sectors, MENA stock markets are poised to attract greater domestic and international investment, driving economic diversification and sustainable development in the region (Neaime, 2016).

Therefore, the audit quality in the MENA region market represents a critical component in ensuring the integrity and reliability of financial information for investors. Strong audit standards and practices can assure investors and stakeholders, ultimately increasing confidence in the market. By maintaining high audit quality standards, the MENA Region market can further solidify its reputation as a viable and attractive investment destination for both local and foreign investors. This will not only contribute to the stability and growth of the market but also support the overall economic development of the region.

2.2. Conceptual Background

Audit quality may be defined as the degree to which an examination is carried out under professional standards and regulatory requirements (Salih and Flayyih, 2020). It encompasses the competence, independence, and ethical behavior of the auditor, as well as the thoroughness and accuracy of the audit procedures performed. Ultimately, good audit quality is necessary to ensure stakeholders that financial accounts are free of material misstatements or fraudulent activities (Christensen et al., 2016).

Whereas an audit consortium refers to a group of audit firms that work together to provide audit services to clients. This collaboration allows for the sharing of resources and expertise, leading to more efficient and effective audits (Bleibtreu and Stefani, 2012; Fontaine et al., 2013; Audousset-Coulier, 2015; Bauer et al., 2019; AbuRaya, 2023). While audit consortiums can offer many benefits, such as increased specialization and global reach, it is important to ensure that the quality of audits remains high despite the collaborative nature of the work. By upholding professional standards and regulatory requirements, audit consortiums can maintain trust and confidence in the financial reporting process (AbuRaya, 2023).

The concept of an audit consortium includes the idea of a joint audit where multiple audit firms work together to conduct an audit for a single client. This approach can help mitigate risks such as conflicts of interest and independence issues that may arise in traditional audits conducted by a single firm (Ittonen and Trønnes, 2015; Kumar and Sharma, 2015; AbouRaya 2023). By leveraging the collective skills and experience of multiple firms, audit consortiums can provide a more thorough review of a clientele's financial statements. Overall, audit consortiums reflect a commitment to delivering high-quality audit services while promoting collaboration and cooperation within the accounting profession (Barghathi et al., 2020).

An additional kind of audit consortium is called a dual audit, in which various independent audit businesses independently examine distinct financial data sets and provide independent audit opinions. This approach allows for a more in-depth analysis of the financial data belonging to the client and can help to ensure that all aspects of the financial statements are thoroughly reviewed (Chang and Chen, 2015; Grosu et al., 2020; AbouRaya 2023). By having multiple firms involved in the audit process, there is a greater level of scrutiny and accountability, which can ultimately lead to a more accurate and reliable audit opinion. Dual audits can be especially beneficial for larger companies with complex financial structures or international operations (Alanezi et al., 2012).

2.3. Theoretical Framework

Due to the lack of strong theories, the components of the theory of joint and dual audits remain unexplored (Trotman and Trotman, 2015; Aljouan, 2021). However, audit consortia are supposed to offer more stringent auditing procedures to lower the possibility that one auditor will complain about another's subpar performance and to prevent organizational blindness, which occurs when one auditor relies on past performance rather than recognizing organizational changes and modifying audit strategy as needed (Deng et al., 2014; Chui et al., 2020).

The topic of auditing also includes stakeholder–agency theory which examines the relationship between auditors, management, and stakeholders. This theory suggests that auditors have a responsibility to provide accurate and transparent financial information to stakeholders, to maintain trust and confidence in the company (Cuevas-Rodríguez et al., 2012). By considering the perspectives and interests of all parties involved, auditing can help ensure that the business is operating ethically and in the most advantageous of its stakeholders. Additionally, auditing lessens the concern of information asymmetry and plays an essential part in corporate governance by providing independent oversight and accountability, thus, aligning with the objectives of stakeholder–agency theory (Van Puyvelde et al., 2012, Almasria, 2018).

The joint and dual audit approach is also supported by the resource dependence theory because of its greater resources and expertise and ability to support management with knowledge and other resources in addition to advisory role on strategic issues, thus, improving audit quality

(Elmashtawy et al., 2023, Alodat et al., 2022). On the other hand, based on signal theory, which states that a company might take some decisions as a signal to shareholders, audit committee might take the decision of joint audit to communicate the company's commitment to issuing high-quality financial reports to shareholders (Alves and Carmo, 2022, Elmashtawy et al., 2023). Therefore, understanding the interplay between these theoretical constructs and the practical implementation of joint and dual audits is essential for advancing audit quality and corporate governance practices (Raimo et al., 2021).

By integrating these perspectives, organizations can optimize their auditing procedures to meet the demands of stakeholders and regulatory bodies while promoting transparency and accountability.

2.4. Empirical Review

Alanezi et al. (2012) investigated the degree of IFRS compliance in listed Kuwaiti financial institutions as well as the application of a dual-audit/joint-audit procedure. The association between the dual audit, joint audit procedure, and the degree of IFRS disclosure compliance were examined using an OLS regression model. The findings showed that compared to financial institutions audited by joint auditors, those examined by dual auditors had a higher level of compliance with IFRS-mandated revelation.

Zerni et al. (2012) investigated the relationship between audit quality and the choice to participate in two audit firms to do a joint audit freely. This relationship was investigated through listed Swedish companies. The study results revealed that selecting a joint audit is linked to significant rises in the fees paid by the client business, indicating a better thought standard of excellence. When taken as a whole, the findings lend credence to the idea that voluntary joint audits benefit audit quality in a climate where litigation is generally low for both public and private companies.

In the same context, Ittonen et al. (2015) evaluated the relationships between audit quality and audit costs and the practice of willingly involving two audit partners. The study showed proof that joint engagement partners may be related to improved audit quality, but, not with more audit fees, using a sample of listed Finnish and Swedish corporations.

Alfraih (2016) examined to impact of corporate governance practices on audit latency in 2013 listed businesses on the Kuwait Stock Exchange (KSE). The investigation discovered that, even after adjusting for several firm variables, the combination of auditors made a substantial impact on how quickly audit reports were completed; in particular, the audit delay dramatically decreased when Big4 organizations conducted the audit.

However, numerous prior studies that introduced inconsistency in the relationship between joint and dual audits and audit quality have found a negative impact on the latter. Chui et al. (2020) evaluated whether audit duality affects audit quality. Analyzing a sample of Russian public firms from 2004 to 2016, it was found that, in comparison to companies who hire a separate firm for each audit, audit duality greatly decreases the probability of auditors to amend the audit opinions for both the International Financial Reporting Standards (IFRS) and Russian Accounting Standards (RAS) audits.

The audit consortium, which combines joint and dual audits, is among the most disputed methods for raising the caliber of audits and settling several associated disagreements. Consequently, an empirical investigation of the effect of the audit consortium on audit quality

evaluation in Egypt was conducted by AbuRaya (2023). Over five years, from 2016 to 2020, a sample of firms listed on the Egyptian Stock Exchange that make up the EGX 30 index are evaluated. The findings demonstrated that doing joint and dual audits of the financial statements of Egyptian enterprises greatly improves the quality of the audit. The results showed that in comparison to organizations that conduct single audits, joint and dual audits considerably increase the likelihood of auditors amending audit judgments. Nonetheless, increase in audit quality was not supported by audit pair combination type.

The moderating impact of joint audits on the link between audit committee effectiveness and audit quality in Egypt was evaluated by Elmashtawy et al. (2023). Sixty-one non-financial firms that were listed between 2016 and 2020 on the Egyptian Exchange were included in the sample. The results showed that audit quality was affected negatively by audit committee independence, effectiveness, and size of the audit company. On the other hand, audit committee meetings had a significant impact on audit quality. And the moderating role of joint audit proved to be significant in most of the hypotheses.

The empirical review presented offered an inclusive examination of the existing literature on joint and dual audits and their impact on audit quality through various schemes. The findings reveal a mixed scope of results, with some studies suggesting a positive association between joint and dual audits and audit quality, while others present evidence of a negative or inconclusive relationship. Factors such as the composition of audit consortia, the regulatory environment, corporate governance practices, and the characteristics of audit firms are found to influence the outcomes of joint and dual audit arrangements. While some studies indicate that joint and dual audits lead to improved audit quality, others suggest potential drawbacks, such as increased audit costs, issues of free riding between audit firms, and conflicting findings about the effects of auditor type on audit quality.

Additionally, the review highlights the significance of considering contextual factors and firm-specific variables when evaluating the result of joint and dual audits on audit quality. Overall, the factual evidence underscores the complexity of the relationship between audit consortia and audit quality, emphasizing the need for further research to provide a clearer understanding of this dynamic relationship and its implications for auditing practices and regulatory policies.

2.5. Research Hypotheses

Based on the above, the following hypotheses are proposed:

H1: Joint audit existence is positively associated with audit quality.

The study deepened on a variety of studies which includes the studies of Alanezi et al. (2012), Zerni et al. (2012), Ittonen et al. (2015), AbuRaya (2023), Elmashtawy et al. (2023), Mnif et al. (2023), applied across diverse contexts, including Egypt, Kuwait, and Scandinavia.

H2: Dual audit existence is positively associated with audit quality.

The study deepened on a variety of studies which includes the studies of Alanezi et al. (2012), Zerni et al. (2012), and Ittonen et al. (2015), AbouRaya (2023).

H3. The existence and number of Big 4 affiliates in joint auditor pair combinations are positively associated with audit quality.

H4. The existence and number of Big 4 affiliates in dual auditor pair combinations are positively associated with audit quality.

The Concept of Big 4 affiliates was discussed in the studies of Eldyasty and Elamer (2023) and in different contexts, which further supports the importance of Big 4 affiliates in improving audit quality.

H5. The existence of an affiliate in joint auditor pair combinations is positively associated with audit quality.

H6. The existence of an affiliate in dual auditor pair combinations is positively associated with audit quality.

The current study also developed the fifth and sixth hypotheses to enhance the understanding of the relationships between joint auditor pair combinations, dual auditor pair combinations, and audit quality.

3. Research Methodology

This section introduces the study's methodology, where qualitative data are collected through targeting secondary data. Accordingly, this section is divided into three main sub-sections.

3.1. Sample Selection

The study data was obtained through reports issued by companies for companies listed on the Middle East and North Africa stock exchange (Egypt, Saudi Arabia, United Arab Emirates, Qatar, Kuwait, Jordan, Iraq, Iran, Algeria, Oman, Yemen, Morocco, Tunisia, Lebanon, Bahrain, Syria, Palestine, and Turkey) during the financial period from 2016 - 2023. This period is selected as it includes several crises such as the COVID-19 pandemic and different political and economic instabilities in the MENA region.

Data are collected from the financial statements of 199 companies, where data are collected from 27 Egyptian companies, 31 Saudi Arabian companies, 7 Emirati companies, 31 Kuwaiti companies, 10 Bahraini companies, 16 Qatari companies, 16 Omani companies, 17 Turkish companies, 5 Iraqi companies, 10 Palestinian companies, 1 Algerian company, 2 Iran companies, 11 Jordanian companies, 2 Lebanese companies, 5 Moroccan companies, 2 Syrian companies, 3 Yemen companies, and 3 Tunisian companies, where all these companies are listed in the stock exchanges of each country.

3.2. Study Variables

Dependent variable: Audit quality (AUDQUAL), as measured by audit opinion modification (AUDOPIMOD).

Independent variables:

- **Joint Audit:** joint audit existence (JAE) and joint auditors' type (JAT) which is denoted by joint auditors' affiliate (JAA) and joint auditors Big 4 (JAB).
- **Dual Audit:** dual audit existence (DAE) and dual audit type (DAT) which is denoted by dual auditors' affiliate (DAA) and dual auditors Big 4 (DAB).

Control variables:

Several studies documented some client company characteristics that might affect the relationship under study (see, e.g. Zerni et al., 2012 Tomasetti et al., 2018). The control variables selected for this study are size, service, profitability, liquidity, and leverage. Definition and measurement of dependent, independent and control variables of the study are shown in Table 1.

Table 1: Definitions and Measurement of the Variables

Variable	Measurement
Independent variables	
Joint audit existence (JAE)	If a joint audit is conducted, a dummy variable with the value 1 will be set, and if not, the value will be 0.
Dual audit existence (DAE)	If a dual audit is conducted, a dummy variable with the value 1 will be set, and if not, the value will be 0.
Joint auditors' type (JAT)	
Joint auditors Big 4 (JAB)	The variable's values range from 0 to 3, signifying the quantity and presence of Big 4 affiliates in the joint audit pair combination: 0 indicates no joint auditors; 1 indicates non-Big 4-non-Big 4; 2 indicates Big 4-non-Big 4; and 3 indicates Big 4-Big 4
Joint Auditors Affiliate (JAA)	The variable's values range from 0 to 3, signifying the quantity and presence of national affiliates in the joint audit pair combination: 0 indicates no joint auditors, 1 indicates nonaffiliate–nonaffiliate, 2 indicates affiliate–nonaffiliate, and 3 indicates affiliate–affiliate".
Dual auditors' type (DAT)	
Dual auditors Big 4 (DAB)	When there are no dual auditors, the variable takes a value of 0; when there are dual auditors, but with non-Big4 -statutory, the value is 1, and one Big4 -statutory dual auditors, the value is 2.
Dual Auditors Affiliate (DAA)	When there are statutory auditors in the dual audit pair combination, the variable's value ranges from 0 to 2, with 0 denoting no dual auditors, 1 nonaffiliate-statutory, and 2 affiliate-statutory.
Dependent Variable	
Audit quality (AUDQUAL)	
Audit opinion modification (AUDOPIMOD)	The amendment or adjustment made by auditors to their initial opinion on a company's financial statements based on their assessment of the correctness and trustworthiness of the information given. The variable takes a value between 0 and 4, 0 for standard unmodified opinion, 1 for emphasis of matter, 2 for qualified opinion, 3 for adverse opinion, and 4 for disclaimer of opinion
Control variables	
Size (SIZ)	By year-end, the total assets of the firm as expressed by their natural logarithm
Service (SER)	A dummy variable with a value of 1 in the case that the business is a service provider and 0 in the other case
Profitability (PRO)	The ratio of the business's net income to its total assets is known as ROA.
Liquidity (LIQ)	The current ratio is computed by dividing the current assets of the company by its current liabilities (Husna et. al, 2019)
Leverage (LEV)	The debt ratio is computed by dividing the total liabilities of the company by the total assets.

3.3. Models Specification

The following five models are designed to examine if the presence of dual and joint audits, as well as the types of auditor pair combinations within each, account for the audit quality of the company's financial statements:

Model 1:
$AUDOPIMOD_{it} = \beta_o + \beta_1 JAE_{it} + \beta_3 SIZ_{it} + \beta_4 SER_{it} + \beta_5 PRO + \beta_6 LIQ_{it} + \beta_7 LEV_{it} + \varepsilon_{it}$
Model 2:
$AUDOPIMOD_{it} = \beta_o + \beta_1 JAB_{it} + \beta_3 SIZ_{it} + \beta_4 SER_{it} + \beta_5 PRO + \beta_6 LIQ_{it} + \beta_7 LEV_{it} + \varepsilon_{it}$
Model 3:
$AUDOPIMOD_{it} = \beta_o + \beta_1 JAA_{it} + \beta_3 SIZ_{it} + \beta_4 SER_{it} + \beta_5 PRO + \beta_6 LIQ_{it} + \beta_7 LEV_{it} + \varepsilon_{it}$
Model 4:
$AUDOPIMOD_{it} = \beta_o + \beta_1 DAE_{it} + \beta_2 SIZ_{it} + \beta_3 SER_{it} + \beta_4 PRO + \beta_5 LIQ_{it} + \beta_6 LEV_{it} + \varepsilon_{it}$
Model 5:
$AUDOPIMOD_{it} = \beta_o + \beta_1 DAB_{it} + \beta_2 SIZ_{it} + \beta_3 SER_{it} + \beta_4 PRO + \beta_5 LIQ_{it} + \beta_6 LEV_{it} + \varepsilon_{it}$
Model 6:
$AUDOPIMOD_{it} = \beta_o + \beta_1 DAA_{it} + \beta_2 SIZ_{it} + \beta_3 SER_{it} + \beta_4 PRO + \beta_5 LIQ_{it} + \beta_6 LEV_{it} + \varepsilon_{it}$

where β_o is a constant, β_1 to β_7 are coefficients of slope parameters, ε is the error term, $_i$ is the company, and $_t$ is the year.

4. Data Analysis

This section is presented to introduce the research findings and results. The statistical packages SPSS and EViews were used to determine the research findings using a variety of statistical techniques. The Generalized Least Squares (GLS) method for regression analysis was carried out for the panel data used for this research. In addition, the fixed versus random effect models were fitted, and the Hausman test was used to select the suitable method of fixed versus random models. The usage of GLS had been determined after testing the data understudy for the Ordinary Least Squares (OLS) method assumptions of normality, and multicollinearity. The following sections describe the analysis techniques findings for each year separately and then for the whole data under study.

4.1. Descriptive Analysis for the Research Variables

Table 2 exemplifies the analysis of the description for the study variables using the Mean, Minimum, Maximum, and Standard Deviation for the study variables. The descriptive analysis of the research variables indicated that Joint Audit Existence (JAE) appears to be a binary variable, with values ranging between 0 and 1. The mean value of 0.537 suggests that, on average, about half of the observations have a value of 1. The standard deviation is quite high relative to the mean, indicating a lot of variability in this metric. Like JAE, Dual audit existence (DAE) is also a binary variable. The mean value of 0.522 indicates that, on average, slightly more than half of the observations have a value of 1. The standard deviation is close to 0.5, suggesting significant variability in this metric as well. Regarding Joint auditors Big 4 (JAB), it is considered a variable with values ranging from 0 to 3. The meaning of 1.146 indicates that, on average, the values are slightly above 1. The relatively high standard deviation of 1.301 suggests considerable variability around the mean.

On the other hand, the Joint Auditors Affiliate (JAA) ranges from 0 to 3. The mean is just below 1, indicating a lower average than JAB. The high standard deviation reflects substantial variability in this measure. Moreover, Dual auditors Big 4 (DAB) ranges from 0 to 2, with a

mean of 0.910 suggesting values are just under 1 on average. The standard deviation is relatively high, showing that there is considerable variability. Dual Auditors Affiliate (DAA), with a range from 0 to 2, has a mean of 0.661, indicating values are below 1 on average, while the standard deviation shows moderate variability.

Concerning the control variables, the results indicated that SIZ varies between approximately 4.18 and 13.94, with a mean of 7.719. This indicates that the average size is on the lower side of the range, additionally, the standard deviation suggests moderate variability in size. Furthermore, SER is a binary variable with a mean of 0.257, indicating that approximately a quarter of the observations have a value of 1. The standard deviation is relatively high, showing some variability. Otherwise, PRO has a wide range from close to zero to about 7.13. The mean value of 0.964 suggests that most values are low. The standard deviation indicates considerable variability around this mean. LIQ ranges from almost zero to over 8. The mean of 1.327 suggests that on average, liquidity is relatively low. The standard deviation shows a high level of variability. However, LEV varies from 0 to approximately 7.68. The mean of 1.342 indicates that leverage is generally low. The standard deviation shows moderate variability.

The findings of the descriptive analysis also suggest that AUDOPIMOD ranges from 0 to 3, with an average of 1.848. This suggests a tendency toward moderate levels of audit opinion modification. The standard deviation is relatively low, indicating less variability. Overall, the data consists of a mix of binary variables, categorical variables with a limited range, and continuous variables. The measures of central tendency (mean) and variability (standard deviation) help to understand the average values and the dispersion around these averages.

Table 2: Quantitative Descriptives of the Research Variables

	Minimum	**Maximum**	**Mean**	**Std. Deviation**
JAE	.0000	1.0000	.536649	.4988183
DAE	.0000	1.0000	.521597	.4996969
JAB	.0000	3.0000	1.145942	1.3009630
JAA	.0000	3.0000	.975785	1.1660174
DAB	.0000	2.0000	.909686	.9267673
DAA	.0000	2.0000	.660995	.7093700
SIZE	4.1811	13.9438	7.719029	1.3118618
SER	.0000	1.0000	.256545	.4368688
PRO	.0001	7.1266	.963517	.4409332
LIQ	.0018	8.2864	1.327126	.6686099
LEV	.0000	7.6838	1.341946	.5437226
AUDOPIMOD	.0000	3.0000	1.848168	.4272748

Table 3 demonstrates the frequency of audit opinions, audit consortia, and auditor pair combination types. The results show that 97.4% of sample companies got an opinion modification where it mostly involves qualified opinion (87.1) and emphasis on matter (10.2). The table also shows that 53.7% of sample companies were audited using joint audits. Companies audited by dual audit mostly employ affiliate audit firms.

Table 3: Frequency Table of Research Variables

Variables		Frequency	Percent
Audit opinion modification	Unmodified opinion	39	2.6
	Emphasis of matter	156	10.2
	Qualified opinion	1331	87.1
	Adverse opinion	2	0.1
	Disclaimer of opinion	0	0
Audit consortia	JAE	820	53.7
	DAE	797	52.2
Joint Auditors Big 4 (JAB)	No joint auditors	724	47.4
	Non-Big 4–non-Big	330	21.6
	Big 4–non-Big 4	1	0.1
	Big 4–Big 4	1524	31
Joint Auditors Affiliate (JAA)	No dual auditors	717	46.9
	Nonaffiliate–nonaffiliated	471	30.8
	Affiliate–nonaffiliated	0	0
	Affiliate–affiliate	340	22.3
Dual auditors Big 4 (DAB)	No dual auditors	731	47.8
	Non-Big 4–statutory	204	13.4
	Big 4–statutory	593	38.8
Dual Auditors Affiliate (DAA)	No dual auditors	731	47.8
	Nonaffiliate–statutory	213	13.9
	Affiliate–statutory	584	38.2

4.2. Testing the Research Hypotheses

This section displays the outcomes concerning the impact of independent variables on Audit Opinion. The correlation matrix displayed in Table 4 reveals several significant relationships. Firstly, the results clarified that an insignificant impact is found between JAE and Audit Opinion, as the P-value is 0.408 (greater than 0.05). On the other hand, JAB 4 exhibits a significant relationship with Audit Opinion, with a P-value of 0.066, suggesting significance, and a positive correlation coefficient of 0.066. Conversely, JAA demonstrates a significant relationship with Audit Opinion, with a P-value of 0.000, indicating significance, yet revealing a negative correlation coefficient of -0.116. However, it is demonstrated that DAE, DAB, and DAA have a significant association with Audit Opinion, with a P-value of 0.000, and a positive correlation coefficient of 0.233, 0.268, and 0.159 respectively. These results suggest that DAE, DAB, and DAA have a stronger positive relationship with Audit Opinion compared to JAA. Otherwise, insignificant relationships, such as that between JAE and Audit Opinion, show that some variables have no measurable impact on the audit opinion.

Furthermore, the results of the correlation analysis demonstrated that Size shows a significant relationship with Audit Opinion, with a P-value of 0.000, suggesting significance, and a negative correlation coefficient of -0.089. Similarly, Service shows a significant relationship with Audit Opinion, with a P-value of 0.000, suggesting significance, and a negative correlation coefficient of -0.143. These results illustrate the significant influence that Size and Service have on Audit Opinion, underscoring the significance of these variables in shaping audit results. On the other hand, Profitability (ROA), Liquidity, and Leverage display a significant positive relationship with Audit Opinion, with a P-value of 0.000, indicating significance, and a positive correlation coefficient of 0.570, 0.550, and 0.550 respectively. These correlations can be related to operational or financial measures, showing interdependencies in the data, including the relationship between size, profitability, liquidity, and leverage, and how these

factors affect or are affected by external audits and audit opinion modifications (AUDOPIMOD). Therefore, the results point to a substantial correlation between audit opinion and profitability, liquidity, and leverage. The positive correlation coefficients show that audit opinions typically get better when certain financial parameters are better in the companies that are the subject of the current investigation.

The findings highlight the critical influence that factors like DAE, DAB, and DAA, as well as financial performance metrics like profitability, liquidity, and leverage, have on audit opinions. On the other hand, size and service harm audit opinions, indicating that larger businesses or those offering better services can be subject to more scrutiny. Overall, the findings suggest that while audit factors should be carefully handled to prevent unfavorable perceptions during audits, enhancing financial measures can result in more favorable audit outcomes.

Table 4: Correlation Matrix for the Research Variables

		1	2	3	4	5	6	7	8	9	10	11	12
1. JAE	R	1.000											
	Sig.	.											
	N	1528											
2. DAE	R	-.787**	1.000										
	Sig.	.000	.										
	N	1528	1528										
3. JAB	R	.916**	-.663**	1.000									
	Sig.	.000	.000	.									
	N	1528	1528	1528									
4. JAA	R	.923**	-.778**	.715**	1.000								
	Sig.	.000	.000	.000	.								
	N	1528	1528	1528	1528								
5. DAB	R	-.872**	.950**	-.765**	-.834**	1.000							
	Sig.	.000	.000	.000	.000	.							
	N	1528	1528	1528	1528	1528							
6. DAA	R	-.625**	.949**	-.496**	-.644**	.805**	1.000						
	Sig.	.000	.000	.000	.000	.000	.						
	N	1528	1528	1528	1528	1528	1528						
7. SIZ	R	.095**	-.118**	.022	.127**	-.159**	-.062*	1.000					
	Sig.	.000	.000	.388	.000	.000	.015	.					
	N	1528	1528	1528	1528	1528	1528	1528					
8. SER	R	-.061*	-.034	-.075**	-.037	-.031	-.036	.170**	1.000				
	Sig.	.017	.179	.003	.144	.232	.154	.000	.				
	N	1528	1528	1528	1528	1528	1528	1528	1528				
9. PRO	R	-.053*	.174**	.000	-.117**	.190**	.133**	-.100**	-.091**	1.000			
	Sig.	.040	.000	.987	.000	.000	.000	.000	.000	.			
	N	1528	1528	1528	1528	1528	1528	1528	1528	1528			
10. LIQ	R	-.142**	.238**	-.109**	-.168**	.249**	.192**	-.062*	-.092**	.469**	1.000		
	Sig.	.000	.000	.000	.000	.000	.000	.015	.000	.000	.		
	N	1528	1528	1528	1528	1528	1528	1528	1528	1528	1528		
11. LEV	R	-.043	.153**	.015	-.106**	.163**	.120**	.024	-.076**	.204**	.445**	1.000	
	Sig.	.094	.000	.551	.000	.000	.000	.340	.003	.000	.000	.	
	N	1528	1528	1528	1528	1528	1528	1528	1528	1528	1528	1528	
12. AUDOPIMOD	R	-.021	.233**	.066**	-.116**	.268**	.159**	-.089**	-.143**	.570**	.550**	.550**	1.000
	Sig.	.408	.000	.009	.000	.000	.000	.000	.000	.000	.000	.000	.
	N	1528	1528	1528	1528	1528	1528	1528	1528	1528	1528	1528	1528

The GLS regression was also conducted to analyze the models of the current research. The results are presented table 5 showing **Model 1** tests H1, which investigates the impact of JAE and the five control variables (SIZ, SER, PRO, LIQ, LEV) on Audit Opinion Modification. It is observed that JAE has a significant positive effect on Audit Opinion Modification, with a P-value < 0.05 (0.000) and β coefficients > 0 (0.071). Similarly, the control variables (SER, PRO, LIQ, LEV) demonstrated a significant positive effect on the dependent variable, with a P-value < 0.05 and β coefficients > 0. However, Size has an insignificant impact on Audit Opinion Modification, as the P-value > 0.05 (0.548) and β coefficients > 0 (0.003). Furthermore, the model's R^2 value stands at 0.6123, suggesting that approximately 61.13% of the variation in Audit Opinion can be explained by the included variables. The analysis emphasizes how important financial control variables and JAE are in affecting the modification of audit opinions. According to the results, Audit Opinion Modification is more common in companies with higher JAE and more robust financial and operational measures. However, the size of a company does not influence the audit opinion outcome in this case. Accordingly, the regression equation is estimated as follows:

$$\mathbf{AUDOPIMOD}$$
$$= \mathbf{0.908261 + 0.071059 * JAE + 0.003229 * SIZ - 0.038424 * SER}$$
$$+ \mathbf{0.565435 * PRO + 0.040429 * LIQ + 0.214490 * LEV}$$

For Model 2, testing H3, the GLS regression analysis indicates that JAB has a significant positive effect on Audit Opinion Modification, with P-values < 0.05 (0.000) and β coefficients > 0 (0.904). Moreover, the control variables (SER, PRO, LIQ, LEV) shows also a significant positive effect on the dependent variable, with P-values < 0.05 (0.015, 0.000, 0.000, and 0.000 respectively) and β coefficients > 0 (-0.038, 0.556, 0.042, and 0.210 respectively). The model's R^2 value stands at 0.613139, suggesting that approximately 61.31% of the variation in Audit Opinion modification can be explained by the included variables. According to the analysis, JAB has a significant and overwhelmingly favorable influence on the determination of audit opinion modification. The control variables, especially profitability and leverage, have a major impact on audit opinion modification in addition to JAB. The R2 value of the model suggests a decent fit and shows that the variables in the model together account for a sizable amount of variability in audit opinion modification. Therefore, the regression equation is estimated as follows:

$$\mathbf{AUDOPIMOD}$$
$$= \mathbf{0.904012 + 0.028756 * JAB + 0.005940 * SIZE - 0.038802 * SER}$$
$$+ \mathbf{0.556654 * PRO + 0.042073 * LIQ + 0.210649 * LEV}$$

The GLS regression was also conducted to analyze **Model 3**, which tests H5, it is found that JAA has a significant positive effect on Audit Opinion Modification, with a P-value < 0.05 (0.009) and β coefficients > 0 (0.015). This indicates that higher JAA values are associated with an increased likelihood of modified audit opinions. Similarly, the control variables (SER, PRO, LIQ, LEV) prove also a significant positive effect on the dependent variable, with P-values less than 0.05 (0.008, 0.000, 0.002, and 0.000 respectively), and β coefficients > 0 (-0.042, 0.569, 0.038, and 0.215 respectively). Moreover, the model's R^2 value stands at 0.607344, suggesting that approximately 60.73% of the variation in Audit Opinion modification can be explained by the included variables. The analysis reveals that the control variables—particularly profitability (PRO) and leverage (LEV)—show significant positive effects, emphasizing their importance in audit opinion modifications. This highlights the relevance of JAA, profitability, and leverage in understanding and predicting audit opinion outcomes. Hence, the regression equation is estimated as follows:

AUDOPIMOD
$$= 0.922700 + 0.015871 * JAA + 0.004164 * SIZ - 0.042697 * SER + 0.569842 * PRO + 0.038226 * LIQ + 0.215058 * LEV$$

Table 5: GLS Pooled Regression (Model 1, Model 2, Model 3)

Variables	Audit Opinion Model 1 H1		Audit Opinion Model 2 H3		Audit Opinion Model 3 H5	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
C	0.908261	0.0000	0.904012	0.0000	0.922700	0.0000
JAE	0.071059	0.0000				
JAB			0.028756	0.0000		
JAA					0.015871	0.0094
SIZE	0.003229	0.5485	0.005940	0.2660	0.004164	0.4450
SER	-0.038424	0.0167	-0.038802	0.0155	-0.042697	0.0081
PRO	0.565435	0.0000	0.556654	0.0000	0.569842	0.0000
LIQ	0.040429	0.0013	0.042073	0.0008	0.038226	0.0025
LEV	0.214490	0.0000	0.210649	0.0000	0.215058	0.0000
R^2	0.612300		0.613139		0.607344	
Adjusted R^2	0.610769		0.611611		0.605793	
F-Statistics	399.8299		401.2464		391.5884	

The Hausman test was conducted to analyze the research variables, the random effect is accepted if the Hausman test is greater than 0.999, however, the fixed effect result was insignificant, so the random effect model is preferred for this analysis. The Hausman test for **Model 1** indicated a high degree of consistency between these variables. By considering the random effect, the results demonstrated that there is a significant positive impact of JAE on Audit Opinion Modification with a P-value of (0.000) and a coefficient of 0.837. This implies that as JAE increases, it positively influences the likelihood of an audit opinion modification.

Similarly, the control variables (PRO and LEV) proved to have a positive significant influence on Audit Opinion Modification with a P-value of (0.000) and a coefficient of 0.114 and 0.050 respectively. Otherwise, the control variables (SIZ, SER, and LIQ) are proved to have an insignificant impact on Audit Opinion Modification with a P-value of (0.496, 0.065, and 0.110) and a coefficient of 0.002, -0.068, and -0.005 respectively. The analysis indicates that profitability (PRO) and leverage (LEV) are crucial factors influencing audit opinion modification. Specifically, companies with higher profitability and higher leverage are more likely to receive a modified audit opinion. In contrast, the size of the company, the nature of its service, and its liquidity do not significantly affect the likelihood of a modified audit opinion based on this data. Therefore, auditors and stakeholders should pay particular attention to profitability and leverage when assessing the risk of audit opinion modification.

By conducting the Hausman test for **Model 2,** it is observed that JAB has a significant positive impact on Audit Opinion Modification, with a P-value of 0.000 and a β coefficient of 0.148. This suggests that as JAB increases, there is a corresponding increase in the likelihood of audit opinion modifications. The results also revealed that the control variables (SER, PRO, and LEV) have a significant impact on Audit Opinion Modification, with P-values less than 0.05 (0.032, 0.000, and 0.000 respectively) indicating their strong influence on the dependent

variable. On the other hand, Size, and Liquidity both have an insignificant impact on Audit Opinion Modification, as the P-values are greater than 0.05 (0.067, and 0.161 respectively).

As for the results of the Hausman test for Model 3, it is observed that JAA has a positive significant effect on Audit Opinion Modification, with a P-value of 0.000 and a β coefficient of 0.108 suggesting that the possibility of audit opinion modifications rises with increased JAA. Additionally, the control variables (Service, Profitability, and Leverage) also exhibit significant effects on Audit Opinion Modification, however, (Size, and Liquidity) show an insignificant impact on Audit Opinion Modification as the P-value is greater than 0.05 (0.314 and 0.354 respectively).

Table 6: Hausman Test (Model 1, Model 2, Model 3)

Variables	Model 1 Random Effect		Model 2 Random Effect		Model 3 Random Effect	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
C	1.226171	0.0000	1.350336	0.0000	1.415290	0.0000
JAE	0.837745	0.0000				
JAB			0.148097	0.0000		
JAA					0.108920	0.0000
SIZE	0.002522	0.4960	0.009816	0.0675	0.005650	0.3141
SER	-0.068370	0.0659	-0.080052	0.0320	-0.106890	0.0044
PRO	0.114849	0.0000	0.185105	0.0000	0.207480	0.0000
LIQ	-0.005857	0.1102	-0.007778	0.1618	-0.005406	0.3453
LEV	0.050308	0.0000	0.078018	0.0000	0.087559	0.0000
Hausman Test	> 0.999		> 0.999		> 0.999	

The GLS regression results are shown in Table 7 for **Model 4**, testing for H2, which illustrates the impact of DAE and control variables on Audit Opinion Modification. It is found that DAE has a significant positive effect on Audit Opinion, with a P-value of 0.000 (P-value < 0.05) and a coefficient of 0.060 (β > 0). It is also observed that the control variables (SER, PRO, LIQ, LEV) have a significant effect on the dependent variable, with P-values less than 0.05 (0.003, 0.000, 0.003, and 0.000 respectively). Furthermore, the model's R^2 value stands at 0.610237, suggesting that approximately 61.02% of the variation in Audit Opinion can be explained by the included variables. The high R2 value of the model emphasizes how much of the diversity in audit opinions can be explained by the interaction of the DAE and control variables. The control variables' noteworthy effects highlight their significance in the audit opinion process even further, implying that operational metrics and financial performance are key determinants of audit outcomes except for the firm size. Therefore, the regression equation is thus estimated as follows:

$$\textbf{AUDOPIMOD} = \textbf{0.899403} + \textbf{0.060238} * \textbf{DAE} + \textbf{0.008834} * \textbf{SIZE} - \textbf{0.046696} * \textbf{SER} + \textbf{0.554018} * \textbf{PRO} + \textbf{0.036413} * \textbf{LIQ} + \textbf{0.207562} * \textbf{LEV}$$

For Model 5, testing for H4, DAB proves to have a significant positive effect on Audit Opinion Modification, with a P-value of 0.000 (P-value < 0.05) and a coefficient of 0.037 (β > 0). In addition, the control variables (SER, PRO, LIQ, LEV) have a significant effect on the dependent variable, with P-values less than 0.05 (0.002, 0.000, 0.003, and 0.000 respectively). Otherwise, Size has an insignificant impact on Audit Opinion Modification, with a P-value of 0.536 (P-value > 0.05) and a coefficient of 0.010 (β > 0). Besides, the model's R^2 value stands

at 0.611478, suggesting that approximately 61.14% of the variation in Audit Opinion can be explained by the included variables. Hence, profitability (PRO), liquidity (LIQ), and leverage (LEV) are significant predictors, highlighting their importance in influencing audit opinions. Despite this, size does not significantly impact audit opinion modifications. The model's R² value suggests a strong fit, indicating that the variables in the model effectively explain a significant proportion of the variation in audit opinion modification. Accordingly, the regression equation is estimated as follows:

$$\textbf{AUDOPIMOD}$$
$$= \textbf{0.889778} + \textbf{0.037065} * \textbf{DAB} + \textbf{0.010452} * \textbf{SIZE} - \textbf{0.048022} * \textbf{SER}$$
$$+ \textbf{0.550984} * \textbf{PRO} + \textbf{0.036357} * \textbf{LIQ} + \textbf{0.206202} * \textbf{LEV}$$

The GLS regression results are shown in Table 7 for **Model 6**, testing for H6, which clarifies the impact of DAA and control variables on Audit Opinion Modification. It is found that DAA proved to have a significant positive effect on Audit Opinion Modification, with a P-value of 0.012 (P-value < 0.05) and a coefficient of 0.024 ($\beta > 0$). Hence, DAA plays a major role in audit opinion modifications, with greater DAA values associated with a higher likelihood of a modified audit opinion. This positive coefficient indicates that increases in DAA are associated with a higher likelihood of modifications in audit opinions. Furthermore, all control variables also have an effect on Audit Opinion Modification except for firm size, as the P-value is greater than 0.05 (0.2123). Additionally, the model's R^2 value stands at 0.607198, suggesting that approximately 60.71% of the variation in Audit Opinion can be explained by the included variables. Therefore, the regression equation is estimated as follows:

$$\textbf{AUDOPIMOD}$$
$$= \textbf{0.918725} + \textbf{0.024355} * \textbf{DAA} + \textbf{0.006711} * \textbf{SIZ} - \textbf{0.045200} * \textbf{SER}$$
$$+ \textbf{0.560971} * \textbf{PRO} + \textbf{0.037430} * \textbf{LIQ} + \textbf{0.210511} * \textbf{LEV}$$

Table 7: GLS Pooled Regression (Model 4)

Variables	Audit Opinion Model 4 (H2)		Audit Opinion Model 5 (H4)		Audit Opinion Model 6 (H6)	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
C	0.899403	0.0000	0.889778	0.0000	0.918725	0.0000
DAE	0.060238	0.0000				
DAB			0.037065	0.0000		
DAA					0.024355	0.0129
SIZE	0.008834	0.1012	0.010452	0.0536	0.006711	0.2123
SER	-0.046696	0.0036	-0.048022	0.0027	-0.045200	0.0050
PRO	0.554018	0.0000	0.550984	0.0000	0.560971	0.0000
LIQ	0.036413	0.0039	0.036357	0.0039	0.037430	0.0031
LEV	0.207562	0.0000	0.206202	0.0000	0.210511	0.0000
R^2	0.610237		0.611478		0.607198	
Adjusted R^2	0.608698		0.609944		0.605646	
F-Statistics	396.3738		398.4488		391.3474	

On the other hand, the results of the Hausman test for **Model 4** indicate that DAE has an insignificant effect on Audit Opinion Modification, with a P-value of 0.556 (P-value < 0.05), demonstrating that fluctuations in this variable do not alter the likelihood of receiving a modified audit opinion. The control variables (Service, Profitability, and Leverage) also show significant effects, with P-values less than 0.05 (0.003, 0.000, and 0.000 respectively), and β

coefficients > 0 (-0.111, 0.229, and 0.096 respectively). Otherwise, both Size and Liquidity prove the presence of an insignificant influence on Audit Opinion Modification, with a P-value of 0.084 and 0.224 (P-value > 0.05). Accordingly, audit opinion modification is still significantly predicted by profitability, service, and leverage. Particularly, profitability has the biggest beneficial impact, whereas service has a big negative impact. In this scenario, size and liquidity do not hold significant weight, suggesting that they do not significantly impact the results of audit opinions.

Regarding the Hausman test that was conducted to analyze **Model 5**, it is demonstrated that DAB has an insignificant effect on Audit Opinion Modification, with a P-value of 0.671 (P-value < 0.05). On the other hand, the control variables (Service, Profitability, and Leverage) have a significant effect on Audit Opinion Modification, on the contrary, Size and Liquidity both have an insignificant influence on Audit Opinion Modification. This underscores the importance of focusing on profitability, leverage, and service when analyzing factors influencing audit opinion modifications, while DAB, size, and liquidity may not be as critical.

Using the random effect for **Model 6**, as shown in Table 8, it could be observed that DAA has a significant, but negative, effect on Audit Opinion Modification, with a P-value of 0.005 (P-value < 0.05) and a coefficient of -0.037 (β < 0). These findings indicate that higher DAA values are linked to a lower chance of obtaining a modified audit opinion, according to the analysis, which shows that DAA has a significant but unfavorable effect on audit opinion modification. In addition, the control variables (Service, Profitability, and Leverage) also affect Audit Opinion Modification, with P-values less than 0.05 (0.002, 0.000, and 0.000 respectively), and β coefficients (-0.112, 0.230, and 0.095 respectively). However, Size and Liquidity both have an insignificant impact on Audit Opinion Modification, with a P-value of 0.081 and 0.213 respectively (P-value > 0.05). Hence, profitability and leverage are two control variables that have a beneficial impact on the modification of the audit opinion, highlighting their significance in the audit results.

Table 8: Hausman Test for Fixed versus Random Effect

Variables	Model 4		Model 5		Model 6	
	Random Effect		**Random Effect**		**Random Effect**	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
C	1.462130	0.0000	1.425262	0.0000	1.479963	0.0000
DAE	-0.013213	0.5562				
DAB			0.027788	0.0671		
DAA					-0.037065	0.0051
SIZE	0.010481	0.0843	0.011294	0.0637	0.010578	0.0814
SER	-0.111152	0.0032	-0.109533	0.0037	-0.112854	0.0028
PRO	0.229871	0.0000	0.227790	0.0000	0.230445	0.0000
LIQ	-0.007817	0.2241	-0.007460	0.2469	-0.008005	0.2132
LEV	0.096303	0.0000	0.095959	0.0000	0.095677	0.0000
Hausman Test	> 0.999		> 0.999		> 0.999	

Table 9 shows the ANOVA table that provides a statistical comparison of the variables under study across the countries of the MENA region, focusing on audit consortiums' (joint and dual) impact on audit quality. The results indicated that across all variables the p-value is 0.000, indicating statistically significant differences between the groups (countries). The F-statistics vary in magnitude but are consistently high, particularly for variables related to audit existences

(JAE, DAE) joint auditor types (JAB, JAA), and Dual auditor types (DAB, DAA). This suggests substantial variability in how audit practices, consortiums, and quality assessments are applied and perceived across the MENA region. Each variable shows that country-specific factors, such as regulatory environments or economic conditions, likely play a significant role in these differences.

Since Iraq's JAE mean is substantially higher (1.00) joint audits are likely conducted more commonly practiced there. This may suggest that collaborative audits are essential to preserving or improving audit quality in that nation. Joint audits entail several auditors, which may indicate a more effective oversight system that enhances audit quality by bringing in a variety of viewpoints not like Turkey, Iran, Lebanon, Tunisia, Yemen, and Algeria, which are equal to (0.00) so this indicated a very low mean.

The high mean of JAA in Iraq (3.00) suggests that joint auditors associated with larger networks or firms (not necessarily the Big 4) have a greater influence on audit procedures. Due to the affiliate's international operations, this could have an impact on audit quality by establishing more standardized methods or improved monitoring.

The JAB in KSA has a high mean (2.37), indicating that joint audit processes are more common among the Big 4 enterprises there. Because of their reputation, extensive global resources, and strict audit procedures, Big 4 firms are frequently linked to superior audit quality.

An elevated DAE mean value of 1.00 indicates that dual audits, in which two firms audit the same company, are more common in Iran. By bringing in two separate viewpoints, dual audits are anticipated to improve audit quality by lowering the possibility of errors or fraud.

The mean of DAA is high (1.5) in Syria, which shows that dual auditors affiliated with large networks have a strong presence. Like JAA, this could positively influence audit quality by ensuring more rigorous auditing standards and practices, unlike Iraq.

The DAB means in Iran, Lebanon, Tunisia, Yemen, and Algeria are high (2.00), suggesting that Big 4 enterprises often participate in dual audit settings. Owing to their experience, resources, and adherence to international audit standards, Big 4 companies' participation in dual audits is expected to yield superior audit quality, much like JAB.

Table 9: ANOVA Test to Compare the Variables within the MENA region Countries

		Sum of Squares	df	Mean Square	F	Sig.
Audit Opinion	Between Groups	30.991	17	1.823	11.110	.000
	Within Groups	247.784	1510	.164		
	Total	278.775	1527			
JAE	Between Groups	191.955	17	11.291	90.696	.000
	Within Groups	187.992	1510	.124		
	Total	379.948	1527			
DAE	Between Groups	109.566	17	6.445	35.816	.000
	Within Groups	271.722	1510	.180		
	Total	381.287	1527			

		Sum of Squares	df	Mean Square	F	Sig.
JAB	Between Groups	1276.297	17	75.076	86.660	.000
	Within Groups	1308.158	1510	.866		
	Total	2584.455	1527			
JAA	Between Groups	625.787	17	36.811	38.326	.000
	Within Groups	1450.317	1510	.960		
	Total	2076.104	1527			
DAB	Between Groups	589.509	17	34.677	72.521	.000
	Within Groups	722.028	1510	.478		
	Total	1311.537	1527			
DAA	Between Groups	72.237	17	4.249	9.217	.000
	Within Groups	696.158	1510	.461		
	Total	768.395	1527			
Size	Between Groups	828.506	17	48.736	40.897	.000
	Within Groups	1799.432	1510	1.192		
	Total	2627.939	1527			
Service	Between Groups	40.583	17	2.387	14.370	.000
	Within Groups	250.851	1510	.166		
	Total	291.435	1527			
Profitability	Between Groups	49.673	17	2.922	17.848	.000
	Within Groups	247.210	1510	.164		
	Total	296.882	1527			
Liquidity	Between Groups	64.467	17	3.792	9.263	.000
	Within Groups	618.161	1510	.409		
	Total	682.629	1527			
Leverage	Between Groups	43.219	17	2.542	9.404	.000
	Within Groups	408.214	1510	.270		
	Total	451.433	1527			

5. Research Discussion

This section presents a discussion of the analysis results, where the analysis is done using SPSS and E-Views. Both correlation and GLS regression are applied. Correlation and GLS regression are used to measure the six hypotheses of the study, as well as measure the control variables. For GLS regression results, five models were tested, they can be discussed as follows:

Model 1 examined the first hypothesis **H1: "Joint audit existence is positively associated with audit quality"**. The random effects model revealed JAE that has a significant positive impact on Audit Opinion Modification. Additionally, the findings demonstrated that

Profitability and Leverage both have significant positive effects, thus key factors, on audit opinion modification. Otherwise, it was indicated that Size, Service, and Liquidity do not significantly affect audit opinion modification. In this regard, several previous studies were consistent with the results, such as (Alanezi et al., 2012; Zerni et al., 2012; Ittonen et al., 2015; AbuRaya, 2023; Elmashtawy et al., 2023; Mnif et al., 2023). These studies proved the importance of JAE in impacting Audit Opinion Modification in several contexts such as Egypt, Kuwait, and Scandinavia. However, the current study focused on gathering secondary data from companies listed on the Middle East and North Africa stock exchange during the financial period from 2016 - 2023.

The Hausman test for Model 2, which investigated the third hypothesis **H3: "The existence and number of Big 4 affiliates in joint auditor pair combinations are positively associated with audit quality"**, confirms that JAB has a significant positive impact on Audit Opinion Modification. This indicated that higher JAB values are linked to an increased likelihood of receiving a modified audit opinion. Additionally, the analysis indicated that besides JAB, profitability, and leverage are key factors influencing audit opinion modifications. In contrast, size and liquidity are less relevant in this context. It is worth mentioning that the results are consistent with that of Lobo et al., 2015; Che et al., 2019; Nurunnabi et al. 2020; Hegazy et al., 2020.

The study also analyzed Model 3, which investigated the fifth hypothesis **H5: "The existence of an affiliate in joint auditor pair combinations is positively associated with audit quality"**, it was clarified that JAA has a significant positive effect on Audit Opinion Modification, which indicates that increased JAA is associated with a higher likelihood of receiving a modified audit opinion. Additionally, the findings revealed that Profitability, Service, and Leverage significantly influence audit opinion modifications, emphasizing their importance in predicting audit outcomes. In contrast, Size and Liquidity do not significantly impact audit opinion modification, suggesting these factors are less relevant in this context. These findings are aligned with the results of Holm & Thinggaard, 2017; Sun et al., 2020; AbuRaya, 2023.

Regarding Model 4, which examined the second hypothesis **H2: "Dual audit existence is positively associated with audit quality"**, the results demonstrated that DAE has an insignificant effect on Audit Opinion Modification, which suggests that changes in DAE do not significantly influence the likelihood of receiving a modified audit opinion. On the other hand, control variables such as Service, Profitability, and Leverage, however, have significant effects on audit opinion modification. Notably, profitability has the largest positive impact, while service has a significant negative impact. Size and Liquidity do not significantly influence audit opinion modifications, indicating their limited relevance in this context. These results were supported by previous studies such as (Alanezi et al., 2012; Zerni et al., 2012; Ittonen et al., 2015; AbouRaya, 2023). The findings suggest that it is important for companies to focus on maintaining profitability and managing leverage to avoid negative audit opinions.

The Hausman test for Model 5, which investigates the fourth hypothesis **H4: "The existence and number of Big 4 affiliates in dual auditor pair combinations are positively associated with audit quality"**, shows that profitability, leverage, and service are crucial factors affecting audit opinion modifications, while DAB, size, and liquidity are less critical in this context. In this context, Che et al. (2019) proved that Big 4 companies typically offer higher-quality audits than non-Big 4 companies because of their superior hiring practices, improved training programs, and more robust incentives and oversight. Big 4 auditors are more likely to provide going concern audit views for financially troubled corporations, while the actual audit quality

may not be much different from that of second-tier firms. However, AbuRaya (2023) mentioned that in mandatory joint audit regimes, the combination of one Big 4 auditor with a non-Big 4 auditor is associated with smaller income-increasing abnormal accruals, indicating higher earnings quality. Additionally, Ocak et al. (2020) clarified that individual auditors from Big 4 firms auditing multiple clients within the same business group do not negatively impact audit quality and may even audit financial statements more timely.

Hypothesis six H**6: "The existence of an affiliate in dual auditor pair combinations is positively associated with audit quality"**, was examined by Model 6 using GLS regression and the random effects model. The results clarified that DAA has a significant but negative effect on Audit Opinion Modification, which implies that higher DAA values are associated with a reduced likelihood of receiving a modified audit opinion. Moreover, control variables such as Service, Profitability, and Leverage have significant positive effects on audit opinion modification, this indicates that these variables positively influence the likelihood of audit opinion modifications. In contrast, Size and Liquidity have insignificant effects, suggesting that these factors do not significantly impact audit opinion modifications. These results are aligned with the results of Lobo et al., 2015; Gaver and Utke, 2018; Sun et al., 2020; AbouRaya, 2023.

To conclude, the analysis reveals that profitability and leverage are crucial predictors of audit opinion modifications, with both factors significantly increasing the likelihood of receiving a modified audit opinion. Joint audit existence (JAE) and the presence of Big 4 affiliates in joint auditor pairs (JAB) positively impact audit opinion modifications, supporting their role in enhancing audit quality. Conversely, dual audit existence (DAE) and Big 4 affiliates in dual auditor pairs (DAB) do not significantly affect audit opinion modifications, while affiliate presence in dual auditor pairs (DAA) has a negative effect, suggesting higher DAA values are associated with a reduced likelihood of modifications. Size and liquidity consistently show insignificant impacts across models, indicating they are less critical in predicting audit opinions.

When these variables (JAE, JAA, JAB, DAE, DAA, DAB) have large means in a specific country, it means that joint or dual audit systems are more prevalent or that Big 4 and affiliate firms are more involved. This is found in Iraq in JAE, and JAA but figured in Iran, Lebanon, Tunisia, Yemen, Syria, and Algeria in DAE, and DAB and in KSA in JAB, and Finally, in Iran, Lebanon, Tunisia, Yemen, and Algeria in DAB. This can have several effects on audit quality:

Increased Scrutiny: Because joint or dual audit procedures typically involve many auditors, which increases the possibility of identifying anomalies or errors, audit quality is likely to be higher in these countries. **Greater Accountability:** Because of their reputational stakes, the existence of Big 4 corporations or robust affiliate networks typically results in higher levels of accountability. These firms' auditors are more likely to uphold strict standards, which enhances the calibres of the audit. **Audit Risk Reduction:** By adding an extra level of examination, joint or dual audit arrangements lower audit risk. This could result in more thorough audits and less financial deception. **Enhanced Credibility:** Due to the perception of enhanced audit quality, companies that participate in joint or dual audits (especially when Big 4 firms are involved) often enjoy greater market confidence.

6. Research Recommendations

From the results concluded from the analysis, some recommendations are provided to decision-makers, financial managers, company managers as well as to the government. As the results proved the effectiveness of joint auditing in enhancing audit quality, the first recommendation provided to policymakers indicated that they should adopt joint auditing that aims to reduce market concentration as well as increase audit quality. It is also recommended to examine the auditor pair composition periodically. This ensures that the auditors working together have complementary skills and expertise, ultimately improving the quality of the audit. Additionally, regular evaluation of the joint auditing process can help identify any potential issues or areas for improvement.

It is also recommended that policymakers and managers apply effective leadership that values honesty, ethical business practices, and good governance for the auditees, which enhances and maintains the auditing outcomes.

For top-level management, it is recommended to put their intention on providing superior education and training to the directors and management of audited entities, this education helps them in developing the quality of financial reporting as well as directing the audit process significantly. It is also strongly advised to establish a powerful entity within every government to supervise and keep an eye on audit quality through systematic and routine quality control inspections.

Given the significant positive impact of Profitability and Leverage on Audit Opinion Modifications in all the investigated models, stakeholders need to focus on and assess these factors. Changes in audit opinions are more common in companies with more profitability and leverage. When conducting their assessments, auditors must give particular consideration to these issues.

Despite the fact that service had a negative coefficient in some contexts, its substantial impact indicates that the type of services the business offers may have an impact on audit results.

Size and liquidity may not require as much attention when assessing the risk of audit adjustments because it was discovered that they have little effect on audit opinion revisions. They shouldn't be entirely ignored, either, as intricate interactions between them and other factors may still occur.

Recommendations are also provided to academies that focus on auditing and audit quality. It is suggested to widen the region and include more developed and developing countries as the current study focused only on the MENA Region. In addition to using different measures for the research variables. Moreover, future research may also broaden its scope by increasing the study population and sample size through collecting data from more companies. Another suggestion is to widen the period of the study, as the current study collects the financial reports through 8 years, starting from 2016 to 2023, while it is suggested to start collecting data before 2011 to document any difference that might exist before and after the Arab Spring revolutions.

7. Research Limitations and Further Research Suggestions

Many limitations were examined in the investigation of the study. The current study collected data from 18 countries in the MENA region and North Africa from 199 companies. Therefore, the researcher suggests future research are to include more companies as well as more countries

not just in the MENA region and North Africa but also other developing and developed countries to get more generalized results and apply comparative analysis.

The second limitation is that the current study focused only on collecting secondary data from the financial reports of the selected companies. Accordingly, it is suggested for future research to collect primary data through questionnaires or interviews with experts to get deeper analysis.

The third limitation is related to the research variables; it is suggested to focus on more independent variables that may have a significant impact on audit quality in addition to investigating more dimensions that could be included within the audit quality measurement.

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