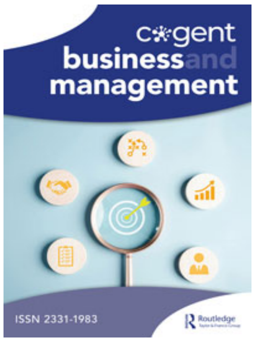

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Audit committee chair effectiveness and firm performance: The mediating role of sustainability disclosure

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Abstract: The primary goal of this study is to investigate the influence of sustainability disclosure (SD) practices on the relationship between audit committee chair characteristics and firms' performance. The current study used an experimental approach to data collection and analysis. The predicted variable is the AC chair characteristics; the predictor variables are the performance indicator's return on equity (ROE). The study investigated the indirect impact of the mediating role in the SD index. We manually analysed 405 annual reports of the companies listed on the ASE from 2014 to 2018. The findings revealed a significant and positive relationship between the accounting expertise, tenure, and monitoring expertise of the AC chairs and the performance of the firm measures tested, namely, ROA and ROE. Meanwhile, AC chair experiential expertise types and firm performance measures

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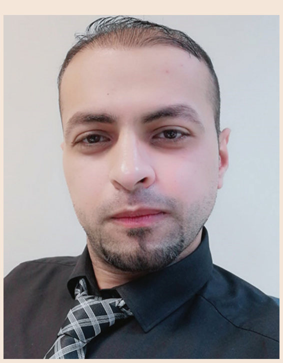

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have a positive but insignificant relationship. Furthermore, the findings revealed that sustainability disclosure mediates the relationship between AC chair effectiveness and ROE in part. The results of this study will help firms understand the expertise of AC chair characteristics that can help firms in Jordan to perform better. The findings indicated that the effectiveness of AC chairs contributes to improved firm performance through sustainability practices. This study is one of the few studies that dealt with AC chair characteristics and one of the first studies that linked this variable to firm performance. Furthermore, our selection of the Jordanian context emphasizes the topic's importance, as it is one of the developing contexts that has recently seen regulatory reforms in financial markets. It also expands on previous research by looking at Jordan's listed ASE firms.

Subjects: Environmental Management; Economics; Finance; Business, Management and Accounting

Keywords: sustainability disclosure; firm performance; audit committee chair characteristics

1. Introduction

Because of the interest of shareholders and stakeholders alike, the importance of good governance has grown over time, and it has piqued the interest of many academic researchers and practitioners. The high-profile accounting scandals such as Toshiba, and Shamayleh Gate in the Jordan context are prime arguments for the importance of solid corporate governance[1] (CG; Mansour et al., 2021). CG that is well-executed improves the firm's reputation and makes it more appealing to investors; effective CG is a key component of market discipline (Levitt, 2000). Board committees are responsible for implementing good governance and strategies aimed at maximizing shareholder value and internal and external stakeholders (Al Amosh & Khatib, 2022a; Hillman & Dalziel, 2003).

Various prior scholars have praised the AC, among other board committees, as a critical tool for ensuring quality governance and improving financial performance. The leading role of the chair of the AC is related to its assistance in reducing agency costs, which enhances the effectiveness of CG mechanisms and thus improves the firm's performance (Berezinets et al., 2017; Chaudhry et al., 2020). It is argued that one of the most important mechanisms of CG is the AC because it ensures transparency and quality of governance in reports and improves performance (Kaawaase et al., 2021; Safari, 2017). Furthermore, the AC chair oversees the audit and provides transparent and high-quality financial reports (Baatwah et al., 2019). Additionally, previous literature found that the AC chair has experience in accountancy and finance fields positively affects financial performance (Al-Matari, 2022; Chaudhry et al., 2020). Baatwah et al. (2019) found that the results of the oversight committee chair are related to reducing audit delays. However, specific research on "AC chair characteristics" is very limited in the governance literature. There needs to be more literature on AC chair characteristics and how it relates to the firm performance. Wherefore, the first goal of our study is to determine the extent to which the AC chair's characteristics affect the companies' financial performance, with four different types of AC chair being considered (accounting expertise, tenure and monitoring expertise, and experiential expertise).

In developing economies, many countries seek to achieve economic prosperity, raise living standards, and increase financial resources (Al Halbusi et al., 2021). Jordan is one of the developing countries that suffer from weakness in the wheel of economic and sustainable development. Moreover, it suffers from a weak application of the principles of good governance (Al Amosh & Khatib, 2022b). Thus, this affects the confidence of investors and shareholders in the financial market (Mansour et al., 2022b). Academically, developing countries are among the least fortunate contexts for research. Thus, the current study targets to fill this gap in the governance literature, by using data from Jordanian companies, which is one of the least explored contexts in the literature (Al Amosh et al., 2022; Mansour et al., 2022a), to determine the direction of the relationship between AC chair and the performance. The very paucity of literature about AC chair characteristics necessitates a thorough investigation into what AC chair characteristics are required to improve the contribution of AC chairs to firm performance.

The study of the relationship between AC chair effectiveness and firm performance is crucial for understanding how to effectively manage and improve organizational performance. It examines the role of AC in ensuring financial reporting integrity, the importance of sustainability disclosure in corporate reporting, and how sustainability disclosure mediates the relationship between AC chair effectiveness and firm performance. The findings of this study can provide valuable insights for organizations, investors, regulators, and other stakeholders in assessing and improving organizational performance. Moreover, the study is important both in terms of theory and practice as it examines the relationship between AC chair effectiveness, firm performance and sustainability disclosure. The study utilizes three prominent theories in management and organizational studies: resource dependence theory, agency theory, and stakeholder theory. These theories provide a theoretical framework for understanding how different variables interact and influence each other, and how they can affect firm performance.

Our research on the relationship between audit committee chair effectiveness and firm performance, with a specific focus on the mediating role of sustainability disclosure, makes an important contribution to the literature, particularly in the context of developing countries. By highlighting the role of sustainability disclosure as a mediating factor, it provides new insights into the relationship between audit committee chair effectiveness and firm performance, and adds to existing literature by demonstrating that sustainability disclosure can act as a bridge between the effectiveness of the audit committee chair and firm performance. Additionally, it highlights the relevance of the resource dependence theory, agency theory, and stakeholder theory in the context of developing countries, offering a framework for understanding the unique challenges and opportunities facing firms in these countries, and how they may differ from those in developed countries. Furthermore, by focusing on developing countries, our research highlights the importance of corporate governance practices, such as the effectiveness of the audit committee chair, in these markets and it is an under-explored area of research and our findings have the potential to inform policy and practice in these countries. Overall, our research provides valuable insights into the complex relationship between audit committee chair effectiveness, sustainability disclosure, and firm performance in developing countries, and has the potential to inform policy and practice in these markets.

While numerous studies have focused on how AC effectiveness affects performance of the firm (Alodat et al., 2021b), and some studies have focused on the effect of sustainability practices on performance of the firm (Saleh et al., 2021; Yilmaz, 2021), the empirical results of both types of studies are conflicting, inconclusive and mixed (Trumpp & Guenther, 2017). According to prior studies (e.g., Baron & Kenny, 1986; Hassan et al., 2022, 2021), when a relationship between the predictor and predicted variables are found to be extensively inconsistent in the literature, the indirect effects of a mediator variable could explain this inconsistency.

Considering the controversial nature of the results for the relationships among AC chair effectiveness, sustainability practices and performance of the firms, there is a need to devise a sound conceptual framework to explore these relationships. Moreover, investigating the relationship between AC chair effectiveness, sustainability practices, and performance of the firm is very important as it not only bridges the two bodies of literature but also provides substantial evidence to the practitioner's policymakers.

In several ways this paper contributes to the governance literature. First, due to the scarcity of prior studies in this field, we expand the existing literature by providing novel experimental evidence about the nexus between AC chair characteristics and firms' performance. Second, we provide a theoretical and empirical perspective on this relationship by employing agency theory to predict and interpret the results. Third, we are testing several important features of the AC chair characteristics (finance and accounting expertise, tenure and monitoring expertise, and experiential expertise) that have not been previously considered. Furthermore, the study may provide new insights in preparation for further research in the future.

2. Literature review and hypotheses development

Ethical behavior is an ideal tool to improve the image of organizations (Al Halbusi, 2022). Therefore, many organizations are working to strengthen their ethical systems and governance in order to improve their image in the eyes of various stakeholders (Al Amosh & Khatib, 2023; Al Amosh and Khatib, 2021). The AC is an extra internal mechanism of the CG whose impact is to progress the goodness of financial administration to increase the company's performance. Interestingly, the effectiveness of the AC chair characteristics has a pivotal role in this respect. Specifically, the expertise and effectiveness of the AC chair are critical in determining corporate performance (Baatwah et al., 2019; Chaudhry et al., 2020). The AC chair has a large influence on the success or failure of the firm's financial reporting mechanisms (Tanyi & Smith, 2015). Also, the AC chair must have some features, such as being an expert on the functioning and effectiveness, having the knowledge and competence, devising the functions and operations of AC, as well as ensuring quality financial reports and firm performance (Ananzeh et al., 2022; Faisal et al., 2021). The AC chair's accounting and financial expertise is regarded as the most important characteristic for ensuring efficient reporting standards, improving report relevance, and providing accurate audits (Alodat et al., 2021b). The AC chair's monitoring expertise enables to reduce agency problems and monitor and maintain the committee's meetings and functions (Chaudhry et al., 2020). Additionally, to ensure the correctness of preparing the financial reports, the chair of the AC must have experiential expertise, due to working long time in the same firm as well as more specific experience and knowledge of a firm (Ghafran & Yasmin, 2018). The effectiveness of the AC is largely determined by the quality and independence of the AC chair. One of the most important characteristics of the AC chair is independence and sufficient experience in the accounting profession (Faisal et al., 2021). In short, the expertise of the AC chair could enhance the monitoring role, which reduces agency problems and boosts corporate performance. However, this issue has not been fully explored yet.

According to stewardship theory, the tenure of the AC chair is a significant characteristic to give continuousness to this committee. If the AC chair has been working for the firm for many years, he would have a thorough understanding of the company culture and operations, making him more accountable and concerned about preserving shareholders' wealth through decreasing discretionary activities to secure adequate levels of shareholders' returns. The influence AC chair tenure on efficiency is more. And this ensures the AC effective management (Gupta & Mahakud, 2021). However, most of experimental evidences have focused only on various of audit committee aspects as a whole, such as AC independence, size, meetings, and gender diversity (Al-Matari et al., 2014; Al Farooque et al., 2020; Zhou et al., 2018), with very few directly examining the chairman characteristics.

2.1. AC chair accounting expertise

For AC effectiveness, accounting expertise is necessary and essential (McMullen et al., 1996). To mitigate agency conflict between external shareholders and preparers of financial statements and to improve the financial reporting quality, the AC regarded it as a checking device to be used (Gupta & Mahakud, 2021). According to resource dependence theory, the AC chair executive relates the firm with external resources and brings in the capital such as experience and expertise. The behavioural decision resource dependency theory identifies experience and knowledge as criteria for experts. The result shows that resource dependence theory is prevalent in auditing or accounting. The resource dependence theory explains where experience and expertise are identified as academic qualifications, managerial experience, and professional (Alodat, Salleh, Hashim et al., 2022a).

The chair's role has a critical influence on the AC's effectiveness. One of the most significant responsibilities of an AC chair is passing related information effectively that requires special attention, such as other committee members, management, and the board. In addition, the duties of the AC chair also include relationships with other important parties like external and internal auditors (Tanyi and Smith, 2014). The supervision of preparing financial reporting is one of the most important duties and responsibilities of the AC. Thus, the AC chair is directly accountable for any default or failure that may occur in preparing the company's financial reports (Al-Absy et al., 2019). Very little published research on the influence of AC chair attributes, such as AC chair expertise in accounting and finance, on a firm's performance. They found that the AC chair's accounting expertise has a significant and positive relationship with the firm's performance (Chaudhry et al., 2020). In the context of emerging economies, such as an Indian-based study by Gupta and Mahakud (2021) reported that the experience of AC chairs significantly improves the performance of companies. Similarly, Alodat et al. (2021b) have substantiated the positive correlation between AC effectiveness and firm performance. Additionally, this fundamental link conforms to resource dependence theory, ensuring information transparency to stakeholders such as creditors and stockholders to create value (Alodat, Salleh, Hashim et al., 2022a). On the other hand, Abbott et al. (2004) study reported that AC characteristics have a negative impact on performance. Furthermore, He and Yang (2014) study showed that the managers' accounting experience reflects negatively on earnings management. Also, Sultana et al. (2015) and Ghafran and Yasmin (2018) pointed out that ACs with more excellent accounting expertise have better incentives to provide higher-quality financial reports.

On the other hand, several authors praised the financial expertise of the AC chair has argued that accounting and financial knowledge (Chaudhry et al., 2020). The AC chair's financial expertise enables him to ensure compliance with proper financial reporting improvement, more compliance with financial reporting standards, and AC audits, all of which can help improve firm performance. Despite previous studies' mixed results, the majority of studies discovered that AC accounting expertise has a positive impact on financial performance. Thus, financial and accounting experience is likely to impact companies' performance by improving supervision and control and reducing agency conflict, as the agency perspective confirms this argument. As a result, the first hypothesis was developed:

H1. AC chair accounting expertise and firm performance have a positive relationship.

2.2. Audit committee chair tenure

About financial operations in companies, preparing reports, controlling and executing tasks effectively and efficiently (Nipper, 2021; Vafeas, 2003). Various research (e.g., Ghafran & Yasmin, 2018; Yang & Krishnan, 2005) have found that firm-specific knowledge improves audit committee monitoring effectiveness. Furthermore, in firms with stronger CEOs, more experienced directors with more experience are more likely to implement stricter supervisory practices (Mansour et al., 2022b; Vafeas, 2003). Long tenure may compromise directors' independence in achieving the firm's goals (Al-Absy et al., 2019). They may behave in management interests rather than the interests of shareholders (Vafeas, 2005).

According to agency theory, the longest tenure of office for the chair of AC is the committee's independence. In the AC chair, that long-serving position is considered well-established and has a greater ability to achieve better control. Further, a relationship may develop between the AC chair and all AC members, which will affect the independence of the committees and the fairness of their decisions. Therefore, there will be bias in the monitoring and auditing process, which will inevitably reflect on the company's performance (Eisenhardt, 1989; Tumwebaze et al., 2021). Besides, stewardship theory argues that AC chair tenure is a system that secures the committee's continuity, as the AC chair is serving the firm for many years. Thus, the chair has a thorough understanding of the organization's operations and culture, which enhances the feeling of loyalty to the company and makes it more responsible for the AC practices. On the other hand, the term of the AC chair enhances the efficiency of audit work and ensures that audit committees are managed more efficiently and effectively.

Only a few researchers have examined the relationship between AC chair tenure and financial performance. From this point of view, we have cited a set of literature that tested the term of membership of boards of directors and performance. For example, Al-Matari (2022) reported a positive impact of board characteristics on financial performance. Also, it was pointed out that directors with longer tenure on the board are associated with higher market values for companies, which indicates better financial performance. In addition, a study by Gupta and Mahakud (2021) states that the AC member's extended term is positively connected with the performance and the bank's value. Conversely, Aldamen et al. (2012) pointed out a negative view of the term of membership of AC, claiming a negative correlation between duration and performance. Furthermore, it can support the argument that as the tenure of the AC chair increases, so does the adoption and experience of the role; this reduces uncertainty, and over time the firm performance improves. Hence the following second hypothesis was developed:

H2. AC chair tenure and firm performance have a positive relationship.

2.3. Audit committee chair expertise

Previous studies have argued that AC is strong and competent, and it plays an important role in increasing firm performance by carrying out duties and executing audit functions efficiently (Aldamen et al., 2012; Chaudhry et al., 2020). Alodat et al. (2021b) Ahmed reported evidence from Jordan indicating that a competent and power of AC reduces agency costs, which reflects positively on companies' performance. Salleh and Stewart (2012) study found that the AC experience enhances the AC's effectiveness in terms of quality, functionality, the ability to improve compliance, transparency, and performance.

Managers' independence is expected to significantly promote informed decision-making (Al Amosh, 2022; Ghafran & Yasmin, 2018). As a result, Faleye et al. (2011) contend that the presence of independent members in AC, more dedicating and monitoring more time and effort to oversight obligations. According to Vafeas (2005), it is expected that board independence is expected to result in better control practices and lower agency costs.

Resource Dependency Theory suggests that organizations rely on external resources to function and achieve their goals. In the context of an audit committee, the chair's expertise can be considered a valuable external resource that the firm relies on to monitor and improve performance. Therefore, according to Resource Dependency Theory, the chair's expertise can positively affect firm performance.

Previous research has claimed that the supervisory role of the board of directors necessitates a significant amount of time and effort, which causes stress in managers (e.g., Fich & Shivdasani, 2006; Ghafran & Yasmin, 2018). On the contrary, several studies have taken the opposite stance (e.g., Yang & Krishnan, 2005); they supported the view that the additional tasks of boards of directors, such as joining audit committees, are linked to the experience and reputation of managers in monitoring. Thus, the busiest managers can outperform their competitors. According to Ghafran and Yasmin (2018), AC chair monitoring expertise improves the committee's reporting functions' performance by reducing the audit report's lag time. Furthermore, Chaudhry et al. (2020) proposed that the experience of the AC chair is linked to higher company performance, even though the results did not show a significant correlation between the AC chair's experiential experience and performance indicators. Hence the following three and four hypotheses were developed:

H3. AC chair monitoring expertise and firm performance have a positive relationship.

H4. AC chair experiential expertise and firm performance have a positive relationship.

2.4. Audit committee chair effectiveness

Agency theory suggests that there is a separation of ownership and control in organizations, which can lead to conflicts of interest between shareholders (principals) and managers (agents). In the context of an audit committee, the chair serves as an agent of the shareholders, tasked with monitoring the management team's actions to ensure that they align with the best interests of the shareholders. The chair's effectiveness in this role can positively affect the firm's performance.

Resource Dependency theory suggests that organizations rely on external resources to function and achieve their goals. The chair's effectiveness as an agent of the shareholders can be considered a valuable external resource to the firm that helps it achieve its goals. The chair's effectiveness in monitoring and improving firm performance can be considered a critical resource that the firm relies on and thus can be positively related to the firm's performance.

Studies carried out globally regarding the roles of audit committees' chair characteristics are prevalent (Alodat et al., 2021b). Comprising specific attributes such as chair accounting, chair tenure, chair monitoring expertise and chair experiential expertise, and output measures of role implementation. These characteristics may play a valuable role in enhancing the overall performance levels of companies, as they represent positive characteristics that aid audit committees in accomplishing their goals. Many kinds of literature have shown that the board of directors' characteristics are important resources and play a decisive role in creating value for companies (Jaafar & El-Shawa, 2009; Jermias & Gani, 2014). Therefore, high qualifications for the audit committees, especially for the AC chairman, may allow companies to enhance their current performance and improve their role efficiently and effectively. Thus, we assume the following:

H5. AC chair effectiveness and firm performance have a positive relationship.

2.5. AC chair effectiveness and sustainability disclosure

Previous literature provided positive evidence about the AC effectiveness and practices of sustainability disclosure (Appuhami and Tashakor, 2017; Alodat, Salleh, Hashim et al., 2022a; Salleh et al., 2022). It has also proven that the effectiveness of AC supports the characteristics of corporate governance that enhance corporate performance. Moreover, stakeholder theory supports the role of AC effectiveness in improving sustainability disclosure practices. Hence the following sixth hypothesis was developed:

H6. AC chair effectiveness and sustainability disclosure have a positive relationship.

2.6. Sustainability disclosure and the performance

Stakeholder theory argues that companies must effectively manage their relationships with various stakeholders to survive, to attract stakeholders' sustainability practices can be used (Deegan and Blomquist, 2006). Meeting different stakeholders' expectations is still a great challenge for firms, and investors must pay attention to it because it helps the firm survive (Alodat, Salleh, Hashim et al., 2022a). Previous studies found a positive and significant relationship between the level of sustainability disclosure and performance (Alodat, Salleh, Hashim et al., 2022a; Al Amosh et al., 2022; Tan et al., 2017). Hence the following hypothesis was developed:

H7. Sustainability disclosure and firm performance have a positive relationship.

2.7. Sustainability disclosure mediates the relationship between AC chair effectiveness and firm performance

According to the Stakeholder theory, organizations are responsible for considering the interests of all stakeholders, including shareholders, employees, customers, suppliers, and the community. Sustainability disclosure serves as a means for organizations to communicate their efforts to meet these stakeholders' needs and can positively impact firm performance. Agency theory posits that there can be a separation of ownership and control within organizations, resulting in potential conflicts of interest between shareholders and managers. Within the context of an audit committee, the chair serves as an agent of the shareholders, responsible for monitoring management's actions to ensure they align with the best interests of shareholders. The effectiveness of the chair in this role can have a positive impact on firm performance. Additionally, resource Dependency theory states that organizations rely on external resources to function and achieve their goals. Sustainability disclosure can be considered a valuable external resource that helps the firm achieve its goals. Therefore, sustainability disclosure mediates the relationship between Audit Committee chair effectiveness and firm performance through the lens of Stakeholder theory, agency theory, and resource dependency theory.

Agency and stakeholder theories support the idea that there is a positive correlation between compliance with sustainability and maximizing economic returns for firms (Al Amosh et al., 2022a; Faisal et al., 2021). Epstein (2008) proposed a sustainability model that describes the demand to research sustainability as a mediating variable among firm strategy toward sustainability and performance of the firm. Greater AC chair effectiveness may be associated with greater sustainability disclosure, which improves long-term value creation (Adedeji et al., 2020; Alodat, Salleh, Hashim et al., 2022a; Porter, 1991). With a paucity of literature to investigate the mediating role of sustainability disclosure on the relationship between corporate governance and performance, the mediation role of sustainability disclosure needs an experimental examination. Hence, the following hypothesis was developed:

H8. Sustainability disclosure mediates the relationship between AC chair effectiveness and firm performance.

3. Methodology

3.1. Data and sample

The current study targets non-financial listed firms on the ASE as the study population. The financial firms were excluded from the ASE due to a difference in governance code, which makes the non-financial and financial firms unparallel (Alodat et al., 2021b; Mansour et al., 2022a). The Code of CG for Listed Shareholders states (currently ASE Code) the study period spanning from 2014 until 2018 was chosen due to the ASE issuance in 2009. The firms with incomplete reports and outliers were excluded. The study analyzed 567 observations for 81 non-financial firms from 2014–2018 (Table 1).

The data used in this study was obtained from secondary sources. There is a growing trend among academic journal editors to incorporate a wider range of data sources in research. As such, the use of secondary data is becoming increasingly important (Ellram & Tate, 2016). To gather the data, it was manually collected from the firm's annual reports and websites of firms on ASE by

Table 1. Sample

The total number of firms listed on the ASE	**192**
Financial sector	(99)
Outliers	(9)
Incomplete annual reports	(3)
Final sample	81

Table 2. Measurement of variables		
Dependent variables	**Acronym**	**Measurements**
Financial performance	ROE	Net income divided by shareholders equity
Operational performance	ROA	Net income divided by total assets
Independent variables		
AC chair accounting expertise	ACCAE	1 if AC chair has experience in accounting or auditing and qualifications, 0 otherwise
AC chair tenure	ACCT	1 if the AC chair has service on the board for more than 6 years, 0 otherwise
AC chair monitoring expertise	ACCME	1 if AC chair is holding more than one committee in the firm; 0 otherwise
AC chair experiential expertise	ACCEE	Takes the number 1 if has more than 3 years of experience in the AC chair; 0 otherwise
AC chair effectiveness	ACEFFE	ACCEFF = Sum of the four audit committee chair characteristics ranging between 0 and 4, with a higher score indicating higher chair effectiveness
Sustainability disclosure	SD	Sustainability disclosure index evaluated by using content analysis
Control variables		
Firm size	FSIZE	Natural logarithm of total assets
Audit quality	AQ	Takes the number 1 if the auditor an external firm from one of the big 4 and 0 otherwise
Firm age	FAGE	Number of years since establishment
Leverage	LEV	As the total liabilities divided by the total assets

using content analysis. This method was chosen to calculate the sustainability disclosure index as it reflects the information that is publicly available to investors.

In this study, the data collection process relied on secondary sources. To gather the data, we used various techniques, including the collection of annual reports from firms listed on the ASE (ASE firms), as well as website data. The data was collected manually, using content analysis as the essential method.

This method involved closely examining and analyzing the content of the annual reports and website data to extract relevant information. This approach was chosen as it allows for a comprehensive and systematic analysis of the data and reflects the information that is publicly available to investors.

The data collection process was conducted systematically to ensure the results' accuracy and reliability. The data were carefully reviewed and verified to ensure they met the research objectives and requirements. Overall, the data collection process and techniques used in this study were designed to provide a thorough and robust analysis of the sustainability disclosure practices of ASE firms.

3.2. Variable definitions

3.2.1. Dependent variables
According to the literature, to measure the firm's performance was used ROE and ROA. Table 2 shows the measures and definitions of performance indicators. The data required to calculate the firm's ROE and ROA were extracted from the annual report.

3.2.2. Independent variables
We use various characteristics of the AC chair based on prior studies. To measure the accounting experience of the chair of the AC, one is taken if the chair has experience and qualifications in accounting, otherwise 0 (Alodat et al., 2021b). The measurement of the AC chair tenure is coded as a dummy variable: 1 if the AC chair has served on the board for more than six years; 0 otherwise (Ghafran & Yasmin, 2018). The measurement of AC chair expertise Chaudhry et al. (2020); The current study used Ghafran and Yasmin (2018) measured to assess whether the committee chair has relevant expertise. Because the absence or presence of related expertise in the chair was assigned a value of 1 or 0, different forms of expertise were measured as dummy variables. Moreover, the AC chair observation experience was measured by determining the number of committees held by the AC chair. In other words, a mark of 1 will be given if the Chairman of the Audit Committee occupies a position in more than one committee in the company. On the other hand, years of experience as a proxy are specified for AC chair experiential expertise. Previous research used a similar measure, such as Salleh et al. (2017).

3.2.3. Mediating Variable sustainability disclosure
The SD index was derived from GRI (G4) for coding and content analysis to explore the extent of sustainability disclosure for firms listed in Jordan's ASE (Alodat, Salleh, Hashim et al., 2022a). This study measured the sustainability disclosure items as follows; 48 indicators for social, 34 indicators for environmental, and nine indicators for financial. According to the GRI G4 sustainability report guideline, there were 91 indicators in total. Each item is a binary variable, represented by zero (0) undisclosed in the annual reports or (1) if disclosed (Mansour et al., 2020). Previous studies have also used this methodology, e.g., Cormier and Magnan (1999) and Alodat, Salleh, Hashim et al. (2022a). The sustainability disclosure for the current study was computed as follows:

$$\textit{sustainability disclosure} = \frac{\sum_{i=1}^{n} dij}{nj}$$

Where, dij = Item not disclosed—0; Item disclosed—1, nj = Total index items. Therefore, $0 \leq ij \leq 1$

3.2.4 Control variables: Four control variables were identified in the current study: audit quality, Leverage, firm size, and firm age (Kaur & Singh, 2020; Salleh et al., 2022). We also controlled for industry effects as the direct comparison of performance and monitoring practices across industries would not produce valid inferences because overall taxation policy and regulations differ among each industry. To do this, industry dummy variables were incorporated as explanatory variables.

3.3. Research models
This study used panel data regression models to examine the relationship between AC chair characteristics and financial performance, and the following research models were used:

$$\mathbf{ROE}_{it} = \beta 0 + \beta 1\ ACCAE_{it} + \beta 2\ ACCT_{it} + \beta 3\ ACCME_{it} + \beta 4\ ACCEE_{it} + B5\ FAGE_{it} + \beta 6\ AQ_{it} + \beta 7\ LEV_{it} + u_{it}$$

$$\mathbf{ROA}_{it} = \beta 0 + \beta 1\ ACCAE_{it} + \beta 2\ ACCT_{it} + \beta 3\ ACCME_{it} + \beta 4\ ACCEE_{it} + B5\ FAGE_{it} + \beta 6\ AQ_{it} + \beta 7\ LEV_{it} + u_{it}$$

Multivariate regression analysis is used in this study to examine the influence of AC chair effectiveness on firm performance. In addition, this study employed the causal steps method (Baron &

Table 3. Descriptive statistics

Variables	Obs.	Mean	Std. Deviation	Minimum	Maximum	Skewness	Kurtosis
ROE	405	0.990	9.829	−20.53	19.38	−1.035	3.878
ROA	405	3.596	12.80	−22.09	29.6	0.1333	3.038
Tobin's Q	405	1.033	0.465	0.450	2.327	1.249	4.231
ACCAE	405	0.511	0.500	0	1	−0.044	1.001
ACCT	405	0.481	0.500	0	1	0.074	1.005
ACCME	405	0.649	0.477	0	1	−0.626	1.392
ACCEE	405	0.476	0.500	0	1	0.093	1.008
ACEFFE	405	2.118	1.544	0	4	−0.154	1.526
SD	405	0.292	0.103	0.14	0.62	0.545	3.119
AQ	405	0.528	0.499	0	1	−0.113	1.012
FSIZE	405	2.014	0.066	1.89	2.16	0.246	2.889
FAGE	405	1.413	0.205	1	1.778	−0.007	2.467
LEV	405	1.416	0.190	1.079	1.724	0.075	2.157

Kenny, 1986) to test the mediation effect of SD on the relationship between AC chair effectiveness and firm performance.

According to Baron and Kenny (1986), the mediating effect for the relationships among variables should satisfy all of the following conditions: (1) Independent variables (IV) have significant effects on the dependent variable (DV). (2) IV has significant effects on the mediator. (3) The mediator has a significant effect on the DV. (4) The effects of an IV on the DV diminish after the effects of the mediator are controlled.

$$ROE_{it} = \beta 0 + \beta 1\ ACEFFE + B2\ FSIZE_{it} + B3\ FAGE_{it} + \beta 4\ AQ_{it} + \beta 5\ LEV_{it} + u_{it} \quad (1)$$

$$SDit = \beta 0 + \beta 1\ ACEFFE_{it} + \beta 2\ FSIZE_{it} + \beta 3\ FAGE_{it} + \beta 4\ AQ_{it} + \beta 5\ LEV + u_i \quad (2)$$

$$ROE_{it} = \beta 0 + \beta 1\ ACCEFF_{it} + B2\ SD_{it} + \beta 3\ FSIZE_{it} + B4\ FAGE_{it} + \beta 5\ AQ_{it} + \beta 6\ LEV_{it} + u_{it} \quad (3)$$

4. Result and discussion

4.1 Descriptive analysis

Table 3 provides the descriptive statistics for the firm performance variables used in this study. Based on the descriptive analysis as summarized in Table 3. The results indicate the average value of ROE is 0.990, as were the maximum and minimum values 19.38 and −20.53, respectively, and the standard deviation is 7.520. The maximum ROA was 30.4, while the minimum value was −19.09, with a mean value of 4.596. The standard deviation is 10. 703. Regarding AC chair characteristics, a 1 maximum and 0 minimum of ACCAE was recorded at about 0.511 with a mean, while the standard deviation was 0.500. Additionally, the ACCT recorded a maximum of 1 and a minimum of 0, as well as a mean of 0.481 and a standard deviation of 0.500. Furthermore, the mean of ACCME was 0.649, as well as the maximum was 1, and the minimum was 0, with a standard deviation of 0.477. Also, the maximum and minimum of ACCEE ranged from 0 to 1, with a mean of 0.476 and a standard deviation of 0.500. Moreover, for the overall ACEFFE, the mean value was 2.118, in which the theoretical scale spanned from (0) to (4). Here, four (4) revealed that the four characteristics were above the sample median, reflecting high board effectiveness. Zero (0) indicated that all four characteristics of the board of directors were equal or lower for the

Table 4. VIF and Correlation matrix results

Variables	ROE	ROA	ACCAE	ACCT	ACCME	ACCEE	AQ	FSIZE	FAGE	LEV	1	2	VIF
ROE	1												
ROA	0.745*	1											
ACCAE	0.626*	0.614*	1										2.38
ACCT	0.598*	0.588*	0.626*	1									1.80
ACCME	0.535*	0.496*	0.451*	0.356*	1								1.47
ACCEE	0.493*	0.539*	0.498*	0.455*	0.4835*	1							1.77
AQ	0.558*	0.554*	0.688*	0.573*	0.4875*	0.604*	1						2.45
FSIZE	0.210*	0.182*	0.258*	0.206*	0.1196*	0.136*	0.140*	1					1.19
FAGE	0.142*	0.067	0.170*	0.102*	0.1774*	0.218*	0.146*	0.318*	1				1.67
LEV	0.037	0.079	0.098*	0.044	0.1545*	0.126*	0.093	0.247*	0.592*	1			1.56
ACEFF1	0.722*	0.71*	0.784*	0.784*	0.751*	0.751*	0.781*	0.231*	0.213*	1351*	1		4.25
SD	0.374*	0.388*	0.315*	0.305*	0.259*	0.299*	0.178*	0.217*	0.188*	0.36*	1		1.20

*Correlation is significant at the 0.05 level.

sample median, which reflected low effectiveness. Meanwhile, SD, where the mean value is 29% with a maximum and minimum level of 62% and 14%, respectively.

4.2 Diagnostic tests

Diagnostic tests were checked on the data.

4.2.1 Correlation Matrix

4.3. Regression Results and Discussion

Table 4 and 5 shows that the results of the Breusch-Pagan test were significant, while the Hausman test's significant; these results indicate the use of fixed analysis. Moreover, the table shows the results of the regression fixed-effect for AC chair characteristics. The ROE model has been considered statistically significant and valid statistically; the R2 within the model was 30%. Furthermore, there is a significant positive relationship between the AC chair characteristics and performance of the financial measured by ROE, supported H1, H2, and H3, and H4 is not supported. The model ROE the R2 within indicates that the variations in the AC chair characteristics explain almost 36% of the variation in the ROE. Therefore, given the results being statistically significant for the ROA model, H4 is not supported, and H1, H2, and H3 are supported.

Next, Table 5 reveals a significant positive relationship between AC chair characteristics and financial performance. These are found to be positively and significantly associated with financial performance, and these results agree with Chaudhry et al. (2020), Gupta and Mahakud (2021), and Al-Matari (2022). In line with the agency and resource theory, this indicates the importance of the AC in Jordan (Alodat et al., 2021b; Hillman & Dalziel, 2003). The results proved the mechanisms of CG, especially the AC chair, which has an essential role in enhancing financial performance (Wahyudin and Solikhah, 2017).

The results in Table 5 showed a significant positive relationship between the AC chair accounting expertise (ACCAE) and financial performance, and this confirms that the practice of CG improves financial performance. This study is in line with previous studies on ACCAE. It is assumed that the AC chair improves the quality of reports. The result also supports agency theory and thus is reflected in the financial performance. These results align with Alodat et al. (2021b), which used AC effectiveness and financial performance, and the results are significantly positive with the ROA and ROE. For instance, the findings revealed that the AC chair's financial expertise positively impacts ROE and ROA (Chaudhry et al., 2020). Additionally, Aldamen et al. (2012) revealed that audit committees are effective and robust in terms of firm performance; having an expert and competent member is significant. Issaa and Siamb (2020) revealed through their study that the return on assets is positively influenced by AC expertise.

The results showed in Table 5 that there is a significant positive relationship between the ACCT and the performance of the financial measured in ROE and ROA. According to the agency and resource theory, the AC chair plays a significant role in monitoring and enhancing performance. This may be due to the longer tenure and more independence of the AC chair. Furthermore, as the term of the AC chair tenure increases, so does the adoption and experience of the job, which may minimize uncertainty and, in turn, improve firm performance over time.

Our findings follow a study conducted by Al-Matari (2022) in developing countries, which showed that the relationship between the AC chair tenure and financial performance is positive and significant; according to a study conducted by Gupta and Mahakud (2021) it was shown that a longer tenure of an AC chair has a positive relationship with performance. A study conducted by Nipper (2021) between AC chair tenure and earnings management showed a positive relationship.

Table 5. Fixed effect regression results for audit committee chair characteristics and firm performance

Variables	ROE		ROA	
	Coefficient	t-stat	Coefficient	t-stat
ACCAE	2.899	2.05**	4.306	2.16**
ACCT	9.675	3.34***	8.829	3.16 ***
ACCME	6.686	2.43***	14.89	5.75***
ACCEE	1.117	1.04	3.496	1.54
AQ	0.1749	0.11	2.035	1.07
FSIZE	52.83	1.46	−20.23	−0.58
FAGE	−6.290	−0.36	24.69	1.06
LEV	−35.39	−1.88**	−60.97	−2.40**
_cons	−57.57	−0.81	76.97	1.12
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
R^2 within	**0.3093**		**0.3638**	
N	405		405	
Hausman test	25.40***		30.95***	
Breusch-Pagan test	82.33***		155.26***	

***Significant at the 0.01 level; **significant at the 0.05 level; *Significant at the 0.10 level

Ghafran and Yasmin (2018) also found that the tenure of the AC chair has a substantial impact on improving the effectiveness of the AC reporting function by lowering the lag period of audit reports. Livnat et al. (2021) show that firms with longer board tenure have higher future firm performance. Al-Absy et al. (2019), the tenure of the chair of the AC is related to earnings management. Thus, the AC chair tenure with a long may reduce the problem of information asymmetry and improve firm performance.

Similarly, Table 5 shows that AC chair monitoring expertise (ACCME) has a significant positive effect on the performance of the firm (t = 2.43, p < 0.01) and ROA (t =5.75, p < 0.01). This result is similar to Chaudhry et al. (2020) research in which AC chair monitoring expertise positively influences firm performance. Ghafran and O'Sullivan (2017) These findings show that AC chair monitoring expertise may be more effective in decreasing audit report delays and, as a result, increasing financial reporting timeliness. These findings are supported by previous research that looked into the importance of AC in Jordanian CG (Alqatamin, 2018; Alodat 2022).

The results in Table 5 showed an insignificant and positive relationship between AC chair experiential expertise (ACCEE) and performance measured in ROA and ROE. The result of the study is in line with the Chaudhry et al. (2020) research in which the AC chair's experiential expertise positively influences firm performance. This is consistent with a study by Ghafran and Yasmin (2018), which showed that AC chair experiential expertise had no relationship. In addition, it agrees with Lin et al. (2006) study, which showed that AC expertise has no significant effect on firms' earnings. This is due to the fact that the AC chair's experiential expertise is less critical in performing the committee's functions than the monitoring expertise and accounting.

Concerning the meditation effect of sustainability disclosure, Model 3 in Table 6 presents the results of sustainability disclosure mediating the relationship between AC chair effectiveness and ROE. Table 6 demonstrates that AC chair effectiveness affects ROE with a positive direction and is

Table 6. Panel regression analysis of the firm performance (ROE)

Variables	Model 1		Model 2		Model 3	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
SD					25.66	4.26***
ACEFFE	5.104	5.96 ***	0.022	4.82***	4.439	5.24***
AQ	0.627	0.40	0.014	1.05	0.070	0.04
FSIZE	61.03	1.63	0.147	1.12	50.89	1.38
FAGE	−6.46	−0.32	0.016	0.30	−2.614	−0.12
LEV	−39.54	−1.92**	0.052	0.89	045.06	−2.11**
_cons	−68.00	−0.91	−0.157	−0.62	−51.03	−0.69
R^2	within 0.2704		between 0.1826		within 0.3181	
N	405		405		405	
Hausman test	18.94***		2.78		23.27***	
Breusch-Pagan test	206.8***		385.6***		87.15***	

*Significant at the 0.10 level; **significant at the 0.05 level; ***significant at the 0.01 level

significant at p < 0.01 (coefficient = 5.104). Consequently, the first condition of Baron and Kenny (1986) is fulfilled. Table 6 also shows that AC chair effectiveness affects sustainability disclosure significantly and positively a relationship at p < 0.01 (coefficient = 0.022) and fulfills the second condition. Also, the results suggest that sustainability disclosure affects ROE when controlling AC chair effectiveness. The effect is significant and positive at p < 0.01 (coefficient = 25.66), fulfilling the third condition. The final step involved comparing the coefficient of the AC chair effectiveness between step one and step three to locate the mediating role of sustainability disclosure in strengthening the relationship between AC chair effectiveness and firm performance (ROE). Moreover, the Sobel tests are applied to check the significance of the mediation effect. The results reported in Table 7 reveal that sustainability disclosure significantly mediates the relationship between AC chair effectiveness and ROE (Sobel =3.193, Aroian = 3.155; p < .001). The findings document that sustainability disclosure practices partially mediate the relationship between the AC chair effectiveness and ROE because the coefficient of the AC chair effectiveness in step three is lower in step one. Thus, the results support H8.

The study used four control variables, namely, firm size (Fsize), Audit quality (AQ), leverage (LEV), and firm age (Fage). The results showed that the control variables of Leverage and financial performance measurement as ROE and ROA are negatively related. Moreover, it was found that the FSIZE, AQ, and FAGE were not significantly associated with the financial performance measurement as ROE and ROA.

The current findings that the accounting expertise of the AC chair, tenure of the AC chair, and AC chair monitoring expertise have played a crucial role in enhancing performance found sufficient support in the literature. The AC is discovered to be an important committee with possible functions and roles in the firm's performance. Furthermore, the committees must be able and strong to perform their duties and functions efficiently and appropriately. The AC chair should have

Table 7. Sobel test (mediation test)

US Supreme Court	US Supreme Court	US Supreme Court	US Supreme Court
Sobel test	3.193	0.182	0.001
Aroian test	3.155	0.184	0.001
Goodman test	3.232	0.180	0.001

Table 8. Regression results for AC chair characteristics and Tobin's Q

Variables	**Tobin's Q**	
	Coefficient	**t-stat**
ACCAE	0.06879	2.36 **
ACCT	0.06063	1.79*
ACCME	0.07679	1.74*
ACCEE	0.04437	0.80
AQ	0.12619	1.73*
FSIZE	1.4560	1.21
FAGE	0.93900	0.90
LEV	−2.6369	−2.66***
_cons	0.3084	0.12
R2 within	**0.0890**	
N	405	
Hausman test	22.82***	
Breusch-Pagan test	399.39***	

***Significant at the 0.01 level; **significance at the 0.05 level; *Significance at the 0.10 level

experience in monitoring and accounting expertise to lead the committee and understand its purpose to decrease agency problems. Therefore, the AC characteristics play a significant role in improving and monitoring financial performance per the resource dependence and agency theories.

In this research, we aimed to explore the relationship between audit committee chair effectiveness and firm performance, specifically focusing on the mediating role of sustainability disclosure. To do so, we employed a theoretical framework that integrates resource dependence, agency, and stakeholder theories. Resource dependence theory explains how organizations depend on external resources and how this dependence can affect performance. In our study, we used this theory to investigate the relationship between the effectiveness of the audit committee chair and the firm's dependence on external resources. Agency theory, on the other hand, looks at the relationship between the principal (the shareholders) and the agent (the audit committee chair) and how the agency problems that may arise when the audit committee chair is ineffective can affect firm performance. Finally, stakeholder theory emphasizes the importance of considering the interests of all stakeholders when making business decisions. Also, the results of the study confirm that the disclosure practices of sustainability can mediate the relationship between audit committee chair effectiveness and firm performance by satisfying different stakeholders.

5. Sensitivity tests

5.1 Alternative measure the firms' performance (Tobin's Q)

Table 8 presents the inclusion of an alternative dependent variable firm performance (Tobin's Q) Examine the Sensitivity results A variable has been added to measure the performance of the firm and is similar to a study conducted by Alodat, Salleh, Hashim et al. (2022a), the model as follows:

$$\textbf{Tobin's Q}_{it} = \beta 0 + \beta 1\ ACCAE_{it} + \beta 2\ ACCT_{it} + \beta 3\ ACCME_{it} + \beta 4\ ACCEE_{it} + B5\ FAGE_{it} + \beta 6\ AQ_{it} + \beta 7\ LEV_{it} + u_{it}$$

6. Conclusion

The study aimed to examine the AC chair characteristics and financial performance. Firms listed on the ASE are the study sample was used, and it consisted of 567 annual observations. The study period extends from 2014–2018. Very few previous studies dealt with the subject. The study found significant and positive relationships between both the accounting expertise of the AC chair, tenure, and monitoring expertise on improve performance and create value for companies. The main argument is that the AC increases risk evaluation, monitoring and excellence of financial reporting perfection, and hence improves the firm's performance. AC chair with strong characteristics may reduce agency problems and costs and thus harmonize the interests of management and shareholders in improving performance and creating value in preparation for achieving satisfactory and sustainable business results. From the perspective of organizations and managers, our findings suggest that investing in sustainability disclosure can help improve firm performance by enhancing the effectiveness of audit committee chairs. Additionally, our research has practical implications for policymakers in developing countries, as it highlights the importance of corporate governance practices and the need for policies and regulations that promote sustainability disclosure.

Our results have important contextual implications for policymakers, administrators, shareholders, investors and organizers alike. Our study provides insights into the importance of the characteristics associated with the AC chair in the context of developing countries such as Jordan. Thus, regulators and policy makers can pay attention to this point and consider strengthening the characteristics of AC's chair and the criteria adopted for its selection and improving related policies. Accordingly, confidence in the performance of the financial market will increase with the continuous improvement in performance. On the other hand, the AC's chair characteristics reduce agency conflict, which gives greater confidence to the shareholders in the management performance. Usually strong corporate governance practices attract investors. Thus, this will give an opportunity for investors to evaluate firm' performance more, this encourages them to invest in firms and achieving higher efficiency in the market by attracting capital. Simultaneously, institutional organizations should be urged to play a role in enacting governance reforms to reduce agency problems and improve the company's performance by considering appointing the AC's chair with strong characteristics to promoting good governance.

Finally, this study there are some limitations, for example, the use of only one country and a small sample five years period for a size of 567 observations. Then, this study can be extended by conducting cross-country study of data to provide a more overall understanding of AC chair characteristics and performance of the firm. In additional, to generalize the results to all firms, future researchers should examine and evaluate these relationships in financial firms. Second, there are many other characteristics that can have a significant effect on this relationship, but the study used only four characteristics of AC chair. On the other hand, testing for mediating and moderating factors may be of great importance for future research.

The implications of this study indicate the significant positive effect between AC chair effectiveness and performance. Furthermore, the reason is AC chair effectiveness in the cause enhances the disclosure of the sustainability. AC chair effectiveness is one of the features of sustainability practices and has had a significant and positive effect on ROE. When practices of the sustainability were considered, it takes its place as an impact on firm. This implication also supports the theoretical idea of addressing various stakeholder needs including, the increasing demand for AC chair effectiveness.

In terms of future research, our study opens up several avenues for further exploration. For example, future research could investigate the specific mechanisms through which sustainability disclosure mediates the relationship between audit committee chair effectiveness and firm performance. Additionally, future studies could explore the generalizability of our findings by examining the relationship between audit committee chair effectiveness, sustainability disclosure, and firm performance in different contexts and in different types of organizations.

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Note
1. I want to replace this phrase to: Accounting scandals have increased the importance of auditing and governance, particularly in developing countries like Jordan (CG; Mansour et al., 2021)

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