

Audit Committee Independence, Audit Committee Size and Earnings Management: Evidence from Jordanian Industrial Companies

Nehad Ibrahim Ineizeh^{1*}, Dr. Safwat Al Tal², Dr. Basman Mazahrih³, Murad Ali Ahmad Al-Zaqeba^{4,6}, Tariq Samih Hanandeh⁵, Ashraf I. A. Qahman⁶

¹Faculty of Economics and Muamalat, Universiti Sains Islam Malaysia. Nilai, Negeri Sembilan, Malaysia. n.ineizeh@usim.edu.my

²Faculty of Business, Higher Colleges of Technology Abu Dhabi, United Arab Emirates. saltal@hct.ac.ae

³Faculty of Business, Higher Colleges of Technology. Abu Dhabi, United Arab Emirates. bmazahrih@hct.ac.ae

⁴Islamic Finance and Wealth Management Institute, Faculty of Economic and Muamalat. Universiti Sains Islam Malaysia Nilai, Negeri Sembilan, Malaysia. murad.ali@usim.edu.my. <https://orcid.org/0000-0003-0746-912X>

⁵Faculty of Business. Al-Zaytoonah University of Jordan. Amman, Jordan. t.Hanandeh@zuj.edu.jo

⁶Center for Language and Foundation Studies A'Sharqiyah University. Ibra, Oman. <https://orcid.org/0009-0000-9954-2763>

Corresponding author: n.ineizeh@usim.edu.my

Abstract

The purpose of this study is to examine the effect of two characteristics of the audit committee (AC), namely the AC independence and the AC size, on the earnings management (EM) of the industrial companies listed on the Amman Stock Exchange (ASE) in Jordan. The study depends on the agency theory, where the AC is considered one of the main internal monitoring mechanisms that can limit the opportunistic behaviour of the managers in the financial reporting. The study uses a balanced panel of 63 industrial companies listed on the ASE during the period from 2013 to 2022, which gives 630 firm-year observations. The EM is measured by the discretionary accruals estimated from the Modified Jones Model (Dechow et al., 1995). The hypotheses were tested by the fixed effects regression, which was selected based on the Hausman test, and the model controls for the board characteristics, the

ownership structure, the cash flow, the profitability, the firm size and the leverage. The results show that the AC independence has a negative and significant effect on the EM ($B = -0.15$, $p = 0.004$), which means that a higher proportion of independent members in the AC is associated with a lower level of discretionary accruals. On the other hand, the AC size has no significant effect on the EM ($B = -0.01$, $p = 0.972$). Accordingly, the monitoring ability of the AC in the Jordanian industrial companies depends on the independence of its members more than on the number of its members. The findings give evidence to the Jordan Securities Commission (JSC) and to the boards of the listed companies that enforcing the real independence of the AC members is more useful than increasing the size of the committee.

Keywords: Audit committee; Independence; Audit committee size; Earnings management; Discretionary accruals; Agency theory; Jordan

1. Introduction

Earnings management (EM) is one of the main problems that affect the quality of financial reporting, and it has received wide attention from researchers, regulators and investors during the last three decades. According to Healy and Wahlen (1999), EM occurs when managers use their judgement in financial reporting and in structuring transactions in order to alter the financial reports, and this is done either to mislead some stakeholders about the underlying economic performance of the company or to influence the contractual outcomes that depend on the reported accounting numbers. Accordingly, EM reduces the reliability of the reported earnings, and it weakens the confidence of investors in the financial statements. In the same direction, the recent Jordanian evidence examined the effect of the EM on the financial performance through the tax avoidance (Maabreh et al., 2026), and this shows that the consequences of EM are not limited to the quality of the reported numbers.

In the framework of the agency theory, EM is considered a result of the conflict of interest between the managers and the shareholders, where the managers have more information about the company than the shareholders (Jensen & Meckling, 1976). Therefore, corporate governance mechanisms were developed in order to monitor the managers and to reduce the agency costs (Fama & Jensen, 1983). Among these mechanisms, the audit committee (AC) has a special position, because the AC is directly responsible for the oversight of the financial reporting process, the internal control and the relationship with the external auditor (Klein, 2002; Xie et al., 2003). In other words, the AC is the governance mechanism that is the

closest to the preparation of the accounting numbers, and for this reason the effectiveness of the AC is expected to be reflected directly on the level of EM.

However, the existence of an AC alone does not guarantee that the committee will perform its monitoring role effectively. Previous studies argued that the effectiveness of the AC depends on its characteristics, and the most studied characteristics are the independence and the size of the committee (Bédard et al., 2004; Klein, 2002; Vafeas, 2005). Regarding the AC independence, the independent members have no economic or personal relationship with the management, and it is expected that they are more willing to question the accounting choices of the managers. As for the AC size, a larger committee may bring more resources and more diverse knowledge to the monitoring process, but it may also suffer from coordination problems and free-riding among the members. It is worth mentioning that the empirical evidence on these two characteristics is not consistent, and the results differ from one context to another (Lin & Hwang, 2010; Zehri & Zgarni, 2020). Recent studies also continue to report different results, where the AC attributes were found to reduce real EM in the Islamic banks (Musa et al., 2025), while most of the AC characteristics failed to reduce EM in the neighbouring Palestinian market (Taleb et al., 2025).

The Jordanian context is suitable for studying this issue for several reasons. Firstly, the ownership of the Jordanian listed companies is concentrated in the hands of families and large shareholders, and this makes the agency problem between the controlling shareholders and the minority shareholders more important than in the developed markets (Abbadi et al., 2016). Secondly, the Jordan Securities Commission (JSC) issued the Corporate Governance Instructions for Shareholding Listed Companies in 2017, and these instructions gave detailed requirements on the composition of the AC, including the minimum number of members and the proportion of independent members (Jordan Securities Commission, 2017). Thirdly, previous studies reported that the enforcement of governance rules in Jordan is weaker than the formal rules themselves, which raises the question whether the characteristics of the AC are effective in practice or they are only a formal compliance (Almarayeh et al., 2022; Mo'taz Amin, 2013). Moreover, recent studies from emerging markets pointed out that the concentrated ownership and the ownership structure should be considered when the effect of the AC on EM is examined (Alqudah, 2026; Attia et al., 2026).

In addition, the industrial sector has a special importance in the Jordanian economy, where it contributed around 24% of the gross domestic product of Jordan in 2022 (Statista, 2022). Moreover, the industrial companies have a relatively large amount of accruals related to

inventories, receivables and fixed assets, and this gives the managers a wide space for discretion in the accounting estimates. Although several studies examined the AC and EM in Jordan, most of these studies focused on real earnings management (Dakhlallah et al., 2021; Kharashgah et al., 2019), or they used shorter periods before the 2017 instructions (Alzoubi, 2019), or they mixed different sectors that follow different regulatory frameworks (Almarayeh et al., 2022). Therefore, there is still a need for recent evidence from the industrial sector that covers the period before and after the 2017 instructions. In addition, the recent Jordanian evidence on EM focused on the financial companies and on other determinants of EM, such as the adoption of the IFRS-XBRL taxonomy (Alharasis & Alshdaifat, 2026), and this leaves the role of the AC in the industrial sector less examined. Moreover, other recent studies in Jordan focused on the banks, where they examined the effect of the FinTech adoption on the financial performance (Alhadab et al., 2025b) and the effect of the digital service transformation and the FinTech adoption on the operational performance (Altaamneh et al., 2026).

Based on the above, the objective of this study is to examine the effect of the AC independence and the AC size on the EM of the industrial companies listed on the Amman Stock Exchange (ASE). Accordingly, the study tries to answer two questions: (1) Does the AC independence affect the EM of the Jordanian industrial companies? (2) Does the AC size affect the EM of the Jordanian industrial companies? To answer these questions, the study uses a balanced panel of 63 industrial companies during the period from 2013 to 2022 (630 firm-year observations), and EM is measured by the discretionary accruals of the Modified Jones Model (Dechow et al., 1995). The hypotheses were tested by the fixed effects regression, after controlling for the board characteristics, the ownership structure and the financial characteristics of the companies.

The results show that the AC independence has a negative and significant effect on EM, while the AC size has no significant effect. These results indicate that the quality of the composition of the AC is more important than the number of its members in the Jordanian industrial companies.

The study contributes to the literature in several ways. Firstly, it provides evidence on accrual-based EM in the Jordanian industrial sector over a ten-year period, and this period covers the introduction of the 2017 Corporate Governance Instructions. Secondly, the study separates between the composition of the AC (independence) and its structure (size), and it shows that the two characteristics do not play the same role in an emerging market with

concentrated ownership. Thirdly, the study uses the fixed effects estimation, which controls for the unobserved firm-specific characteristics that do not change over time, and this reduces the omitted variable bias that exists in many of the previous cross-sectional studies in Jordan. Finally, the findings have practical implications for the JSC, the boards of directors and the investors regarding the design of the AC.

The rest of the paper is organised as follows. Section 2 presents the institutional background of Jordan. Section 3 reviews the literature and develops the hypotheses. Section 4 describes the research design. Section 5 presents the results, and Section 6 discusses these results. Finally, Section 7 concludes the paper and presents its implications and limitations.

2. Institutional background: the audit committee in Jordan

The corporate governance framework of the Jordanian listed companies is regulated mainly by the Companies Law and by the rules issued by the Jordan Securities Commission (JSC). The JSC issued the first Corporate Governance Code for listed companies, and its implementation started in 2009, where the code depended to a large extent on the OECD principles (Abbadi et al., 2016; Mo'taz Amin, 2013). However, the first code was based mostly on the principle of “comply or explain”, and several of its provisions were considered as recommendations more than obligations. Accordingly, previous studies reported that the level of compliance with the code was different between the companies, and it was lower in the smaller companies (Alhazaimeh et al., 2014).

In 2017, the JSC issued the Instructions of Corporate Governance for Shareholding Listed Companies, and these instructions became mandatory for the companies listed on the ASE (Jordan Securities Commission, 2017). Ananzeh (2024) discussed how the corporate governance in Jordan evolved between the periods before and after these reforms, and this shows that the year 2017 is considered a turning point in the Jordanian governance framework. With regard to the board of directors, the instructions require that at least one third of the board members shall be independent (Article 4). As for the AC, Article 6 states that the committee shall consist of at least three non-executive board members, at least two of them shall be independent, and the committee shall be chaired by one of the independent members, provided that the majority of the members shall be independent. In addition, the instructions require that all AC members must have knowledge in financial and accounting matters, and that the AC shall meet at least four times per year (Articles 6 and 7). Furthermore, Alharasis and Alshdaifat (2026) found that the EM practices of the Jordanian

financial companies decreased after the implementation of the IFRS-XBRL taxonomy, and this indicates that the regulatory and reporting reforms in Jordan can be reflected in the quality of the reported earnings. It is worth mentioning that the reforms in Jordan were extended also to the tax and the customs administrations, where the digital taxation and the digital accounting (Shubailat et al., 2024c), the customs intelligence and risk management (Shubailat et al., 2024b), and the taxation and customs strategies (Zobi et al., 2023; Al-Zaqeba, 2025) were examined as tools for improving the efficiency, the sustainability and the environmental responsibility.

It should be noted that these requirements put a minimum level for the size and the independence of the AC, but they do not guarantee that the members will perform their role effectively. In the Jordanian environment, the ownership is concentrated, and many companies are controlled by families or by a small group of large shareholders (Abbadi et al., 2016). In a similar regional setting, Elagha et al. (2025) examined the family ownership concentration as a factor that changes the relationship between the effectiveness of the board and the corporate disclosure in Palestine, and this supports the view that the concentrated ownership shapes how the governance mechanisms work in the region. In addition, the family connectedness was examined in relation to the entrepreneurial intentions (Shubailat et al., 2025), and this indicates that the family ties influence the decisions in the business environment of the region. Similarly, Ali et al. (2026) found in Bangladesh that the family control increases the earnings manipulation of the politically connected companies, which shows that the family control may weaken the monitoring environment in the emerging markets. In this situation, the board members, including the members who are classified as independent, may be selected by the controlling shareholders, and this may limit their real independence from the management. Moreover, previous studies indicated that the enforcement of governance rules and the legal protection of minority investors in Jordan are weaker than in the developed markets (Almarayeh et al., 2022). Therefore, the Jordanian context gives an opportunity to test whether the formal characteristics of the AC, which are required by the regulations, are translated into a real reduction in EM.

Regarding the industrial sector, the ASE listed 98 industrial companies at the end of 2022, and these companies work in different activities such as chemicals, mining, food, pharmaceuticals and engineering industries. The industrial companies follow the same governance instructions of the JSC, and they are different from the banks, which are subject to additional governance rules from the Central Bank of Jordan, and for this reason the

governance of the banks is usually studied separately (Alhadab et al., 2025a). In addition, the financial sector is affected by the FinTech developments, which were discussed as channels for promoting the financial inclusion (Mousa & Maabreh, 2024; Saroito, 2025), and which depend also on the evaluation of the transaction costs by the users (Zhao et al., 2024). Accordingly, the focus on the industrial sector gives a more homogeneous sample regarding the regulatory framework.

3. Theoretical framework, literature review and hypotheses development

3.1 Agency theory and the monitoring role of the audit committee

The agency theory is the main theory that is used in the studies of corporate governance and EM. According to Jensen and Meckling (1976), the separation between ownership and control creates an agency relationship, in which the shareholders (principals) delegate the management of the company to the managers (agents). Since the managers have their own interests, and since they have more information than the shareholders about the company, the managers may take decisions that serve their interests at the expense of the shareholders. In the area of financial reporting, this behaviour appears in the form of EM, where the managers use the flexibility of the accounting standards in order to report earnings that serve their bonuses, their job security or the targets of the market (Healy & Wahlen, 1999).

In order to reduce this problem, Fama and Jensen (1983) argued that decision control should be separated from decision management, and that the board of directors and its committees should monitor the decisions of the managers. In this context, the AC is delegated by the board to oversee the financial reporting process, to review the financial statements, to evaluate the internal control system and to communicate with the external auditor (Klein, 2002). Therefore, the AC is considered a key monitoring mechanism, and its effectiveness is expected to reduce the information asymmetry and to limit the discretion of the managers over the accruals. In the Jordanian context, the recent studies continued to examine how the governance and monitoring mechanisms, such as the audit quality, are related to the financial decisions of the listed companies (Alsmadi et al., 2025a, 2025b), and this reflects the growing interest in the role of the monitoring mechanisms in this market. Moreover, the digital technologies such as the blockchain were examined as tools for enhancing the governance and the risk management in Jordan (Jebril et al., 2024; Shubailat et al., 2024a). Recent qualitative evidence also shows that the effectiveness of the AC is driven by the composition

and the characteristics of the committee, together with the trust, the ethics and the power and authority of its members (Rampershad, 2026).

However, the agency theory also suggests that the monitoring mechanisms are effective only when the monitors have the incentives and the ability to monitor. In emerging markets with concentrated ownership, such as Jordan, the main agency conflict may be between the controlling shareholders and the minority shareholders, and not only between the managers and the shareholders. In this situation, the controlling shareholders may influence the selection of the AC members, and this may reduce the effectiveness of the committee. For this reason, it is important to examine which characteristics of the AC are related to a real monitoring, and which characteristics are only formal. Consistent with this argument, recent studies from the emerging markets examined the concentrated ownership and the ownership structure as factors that moderate the relationship between the AC and EM (Alqudah, 2026; Attia et al., 2026).

3.2 Earnings management and its measurement

EM can be performed through accrual-based EM or through real activities EM. The accrual-based EM depends on the choice of accounting methods and accounting estimates, such as the provisions, the depreciation and the allowance for doubtful receivables, and it does not change the cash flows of the company. On the other hand, the real EM depends on changing the timing or the structure of the real operations, such as reducing the discretionary expenses or overproduction. The current study focuses on accrual-based EM, because the AC reviews directly the accounting estimates and the judgements that are behind the accruals, and accordingly this type of EM is expected to be affected more directly by the monitoring of the AC.

Accrual-based EM is usually measured by the discretionary accruals, which are the part of the total accruals that cannot be explained by the economic performance of the company. The Jones (1991) model was developed to separate the non-discretionary accruals from the discretionary accruals, and then Dechow et al. (1995) modified this model by adjusting the change in revenues by the change in receivables, because the managers can manage the credit sales more easily than the cash sales. Dechow et al. (1995) found that the Modified Jones Model has more power in detecting EM than the other models, and for this reason it is one of the most used models in the literature, including the studies in Jordan (Abbadi et al., 2016; Alzoubi, 2019). The recent studies continue to use the discretionary accruals as the main

proxy of accrual-based EM. For example, Barua et al. (2025) showed that the managers adjust the accruals in order to meet or beat the earnings of the peer firms, and that this behaviour is associated with later restatements, while Li et al. (2025) used the discretionary accruals to show that the managers in an emerging market use the timing of the audit to inflate the earnings. Moreover, Bouaziz et al. (2025) measured EM by the discretionary accruals when they examined the effectiveness of the AC. It should be noted that the reported earnings are related also to the tax obligations of the companies, and the previous studies in Jordan examined the determinants of the tax compliance (Al-Zaqeba & Al-Rashdan, 2020; Al-Omari et al., 2025) and the role of the tax avoidance in the relationship between the EM and the financial performance (Maabreh et al., 2026).

3.3 Audit committee independence and earnings management

The independence of the AC refers to the proportion of the committee members who have no material relationship with the company or with its management. The independent members are expected to be more objective in evaluating the financial reports, because their wealth and their career do not depend on the management. Moreover, the independent members have an incentive to protect their reputation in the market for directors, and this makes them more willing to challenge the aggressive accounting choices of the managers (Fama & Jensen, 1983; Klein, 2002).

The empirical evidence from the developed markets supports, in general, the negative relationship between AC independence and EM. Klein (2002) found that the abnormal accruals are negatively related to the proportion of outside directors in the AC, and that a reduction in AC independence is associated with a large increase in the abnormal accruals. Similarly, Bédard et al. (2004) found that companies with a fully independent AC have a lower probability of aggressive EM. In addition, Abbott et al. (2004) reported that the independence of the AC is associated with a lower probability of restating the financial statements. The meta-analysis of Lin and Hwang (2010) also concluded that AC independence is negatively associated with EM. More recently, Bouaziz et al. (2025) used an index of AC effectiveness for 151 French companies and found that the external audit quality moderates the relationship between the AC effectiveness and EM, and Hedfi (2026) found that the AC independence significantly moderates the relationship between the board nationality diversity and EM in the French listed companies. In addition, Kohlbeck and Wang (2025) found an inverted U-shaped relationship between the AC tenure and the financial

reporting quality, which indicates that a very long relationship with the company may weaken the effective independence of the AC members.

However, the evidence from the emerging markets is less consistent. Some studies found that AC independence reduces EM (Ngo & Le, 2021; Nikulin et al., 2022), while other studies did not find a significant effect (Mangala & Singla, 2023; Zehri & Zgarni, 2020). The recent evidence is also mixed, where Musa et al. (2025) found that the independent directors in the AC reduce real EM in 57 Islamic banks from 16 countries, while Taleb et al. (2025) found that the AC characteristics largely failed to reduce EM in the Palestinian non-financial companies. In Jordan, Hamdan et al. (2013) did not find a significant relationship between the independence of the AC and the earnings quality, and they explained this result by the formal nature of independence in the Jordanian companies. On the other hand, Kharashgah et al. (2019) found that AC independence is negatively associated with real EM in the companies listed on the ASE, and Dakhilallh et al. (2021) found that the independence of the AC changes the relationship between the board structure and real EM. Moreover, Almarayeh et al. (2022) examined the role of the AC in mitigating EM in Jordan, and they showed that the effectiveness of the AC should be examined in the light of the weak institutional environment.

Based on the agency theory, and taking into account that the 2017 Corporate Governance Instructions require the majority of the AC members to be independent, it is expected that a higher proportion of independent members increases the objectivity of the AC and reduces the ability of the managers to manage the accruals. Accordingly, the first hypothesis is formulated as follows:

H1: The AC independence has a negative effect on the EM of the industrial companies listed on the ASE.

3.4 Audit committee size and earnings management

The AC size refers to the number of members of the committee. From the side of the agency theory and the resource dependence view, a larger committee has more members, more time and more diverse knowledge and experience, and this is expected to improve the ability of the AC to discover problems in the financial reporting (Bédard et al., 2004; Lin et al., 2006). Moreover, Menon and Williams (1994) argued that a committee with a small number of members may not be able to perform its tasks, and for this reason many regulators, including the JSC, require a minimum of three members in the AC.

On the other side, a larger committee may suffer from problems of coordination and communication, and the responsibility of monitoring may be diffused among the members, which leads to free-riding (Vafeas, 2005). In addition, when the members are selected by the controlling shareholders, increasing the number of members does not necessarily increase the independent monitoring, and it may be only a symbolic compliance with the regulations. In this regard, Rudyanto and Kusnadi (2025) found that the status of the AC members, and not only their presence in the committee, reduces real EM in the Indonesian manufacturing companies, which supports the view that the quality of the members is more important than their number.

The empirical evidence regarding the AC size is mixed. Lin et al. (2006) found that the AC size is negatively associated with earnings restatements, and Lin and Hwang (2010) reported a negative relationship between the AC size and EM in their meta-analysis. In contrast, other studies did not find a significant relationship between the AC size and EM (Bédard et al., 2004; Xie et al., 2003). In the recent literature, Musa et al. (2025) found that the larger AC reduces real EM in the Islamic banks, and this shows that the evidence on the AC size is still not settled. In Jordan, Hamdan et al. (2013) did not find a significant relationship between the AC size and the discretionary accruals, and Kharashgah et al. (2019) also reported that the AC size has no significant effect on real EM.

Although the evidence is mixed, the main argument of the agency theory and of the regulators is that a larger AC has more resources for monitoring. Therefore, the second hypothesis is formulated in the direction that is expected by the theory, as follows:

H2: The AC size has a negative effect on the EM of the industrial companies listed on the ASE.

Figure 1 summarises the research framework of the study.

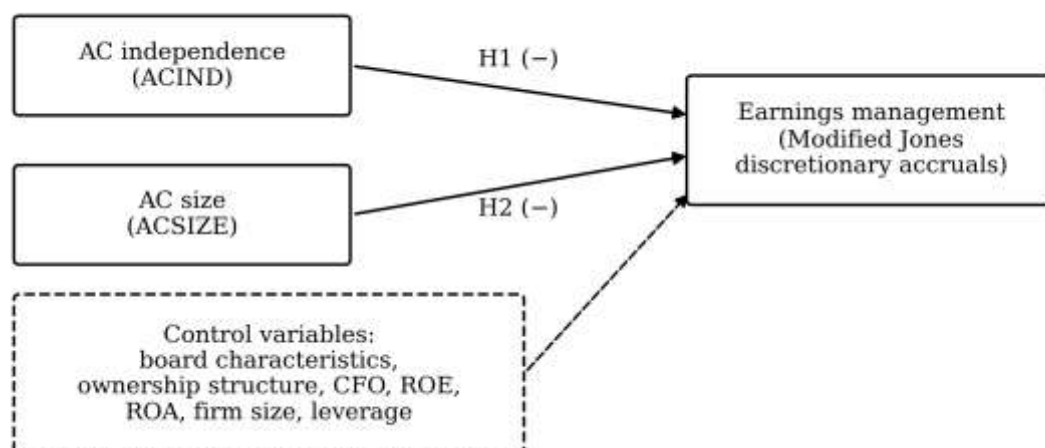


Figure 1. Research framework

4. Research design

4.1 Sample and data

The population of the study consists of the industrial companies listed on the ASE, and the number of these companies was 98 as at 31 December 2022. The sample period extends from 2013 to 2022, and this ten-year period was selected because it includes several years before and after the issuance of the 2017 Corporate Governance Instructions. In order to be included in the sample, the company should be listed on the ASE during the whole period of the study, and it should have complete data for all the variables in all the years. Accordingly, 35 companies were excluded, because they had incomplete financial or governance data, or they were delisted from the ASE, or they were involved in mergers and restructuring events that make their data not comparable. Therefore, the final sample consists of 63 industrial companies, and this gives a strongly balanced panel of 630 firm-year observations (63 companies $\times$ 10 years). Table 1 summarises the sample selection.

Table 1. Sample selection

Description	Number of companies
Industrial companies listed on the ASE as at 31 December 2022	98
Less: companies with incomplete data, delisted companies, or companies with restructuring events	(35)
Final sample	63
Number of years (2013 to 2022)	10
Firm-year observations	630

The financial data were collected from the annual reports of the companies that are published on the website of the ASE, and the data of the AC and the other governance variables were collected manually from the corporate governance reports and the notes in the same annual reports.

4.2 Measurement of earnings management

The dependent variable is EM, and it is measured by the discretionary accruals of the Modified Jones Model (AMJM) of Dechow et al. (1995). Firstly, the total accruals (TA) were calculated as the difference between the net operating income (NOPI) and the cash flow from operating activities (CFO): This approach is still widely used in the recent studies of the AC and EM (Bouaziz et al., 2025; Li et al., 2025).

$$TA_{i,t} = NOPI_{i,t} - CFO_{i,t} \quad (1)$$

Secondly, the parameters of the non-discretionary accruals were estimated by the following regression, where all the variables are scaled by the total assets of the previous year in order to reduce the heteroscedasticity:

$$\frac{TA_{i,t}}{A_{i,t-1}} = \alpha_1 \left(\frac{1}{A_{i,t-1}} \right) + \alpha_2 \left(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}} \right) + \alpha_3 \left(\frac{PPE_{i,t}}{A_{i,t-1}} \right) + \varepsilon_{i,t} \quad (2)$$

where A is the total assets, ΔREV is the change in revenues, ΔREC is the change in net receivables, and PPE is the gross property, plant and equipment of company i in year t . Thirdly, the non-discretionary accruals (NDA) were calculated by using the estimated parameters, and the discretionary accruals were obtained as the difference between the scaled total accruals and the NDA, which is equal to the prediction error of the model:

$$AMJM_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - \left[\hat{\alpha}_1 \left(\frac{1}{A_{i,t-1}} \right) + \hat{\alpha}_2 \left(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}} \right) + \hat{\alpha}_3 \left(\frac{PPE_{i,t}}{A_{i,t-1}} \right) \right] \quad (3)$$

A higher value of AMJM indicates a higher level of EM.

4.3 Independent and control variables

The two independent variables are the AC independence (ACIND) and the AC size (ACSIZE). ACIND is measured as the percentage of independent members to the total number of AC members (Mangala & Singla, 2023), and ACSIZE is measured as the number of AC members in the year.

In addition, the model includes two groups of control variables, since the previous literature showed that these variables affect EM. The first group includes the other governance mechanisms, namely the board size, the board independence, the board meetings, the CEO duality, the other attributes of the AC (the frequency of meetings and the financial expertise), the managerial ownership, the family ownership and the institutional ownership. It is worth mentioning that including these governance variables is important, because the AC works together with the board and it is affected by the ownership structure, and ignoring these variables may lead to a biased estimate of the effect of the AC. The second group includes the financial characteristics of the company, namely the operating cash flow, the return on equity, the return on assets, the firm size and the leverage. Table 2 presents the definition and measurement of the variables.

Table 2. Definition and measurement of the variables

Variable	Label	Measurement
Dependent variable		
Earnings management	AMJM	Discretionary accruals from the Modified Jones Model (Dechow et al., 1995)
Independent variables		
AC independence	ACIND	Percentage of independent members to the total number of AC members
AC size	ACSIZE	Number of AC members in the year
Governance controls		
Board size	BODSIZ	Number of board members
Board independence	BODIND	Percentage of independent members to the total number of board members
Board meetings	BODM	Number of board meetings in the year
CEO duality	CDUL	1 if the chairman and CEO positions are held by one person, 0 otherwise
AC meetings	ACMEET	Number of AC meetings in the year
AC financial expertise	ACEXP	1 if one or more AC members hold a degree in accounting or finance, 0 otherwise
Managerial ownership	MOWN	Percentage of shares owned by the directors
Family ownership	FOWN	Cumulative percentage of shares owned by families
Institutional ownership	INOWN	Percentage of shares owned by institutional investors
Financial controls		
Operating cash flow	CFO	Natural logarithm of the cash flow from operating activities
Return on equity	ROE	Net income divided by shareholders' equity
Return on assets	ROA	Net income after interest and tax divided by total assets
Firm size	FSIZE	Natural logarithm of total assets
Leverage	LEV	Total debts divided by total assets

4.4 Empirical model

In order to test the hypotheses, the following panel regression model was estimated:

$$\begin{aligned}
 & AMJM_{i,t} \\
 & = \beta_0 + \beta_1 ACIND_{i,t} + \beta_2 ACSIZE_{i,t} + \sum_k \gamma_k GOV_{k,i,t} + \beta_3 CFO_{i,t} + \beta_4 ROE_{i,t} + \beta_5 ROA_{i,t} \\
 & \quad + \beta_6 FSIZE_{i,t} + \beta_7 LEV_{i,t} + \mu_i + \varepsilon_{i,t} \quad (4)
 \end{aligned}$$

where *GOV* refers to the vector of governance control variables defined in Table 2, μ is the firm-specific effect, and ε is the error term. According to H1 and H2, it is expected that β_1 and β_2 will be negative.

4.5 Estimation procedure

The data were analysed by using STATA version 16.0. Before the estimation, the data were declared as panel data ($N = 63$, $T = 10$), and the data were screened for outliers, normality, multicollinearity, heteroscedasticity and autocorrelation. Regarding the outliers, the boxplots showed some extreme values, especially in the cash flow, the ROA and the ROE, and accordingly these extreme values were winsorized. As for the normality, some variables had values of skewness and kurtosis above the acceptable limit, and for this reason the variables were transformed by the Van der Waerden normal scores method, which was found to be more accurate than the other rank-based transformations (Lüpsen, 2018; Van der Waerden, 1952).

After that, the choice between the fixed effects model and the random effects model was made by the Hausman (1978) test. The null hypothesis of the Hausman test is that the random effects model is consistent and efficient, and the rejection of this hypothesis means that the firm-specific effects are correlated with the explanatory variables, and in this case the fixed effects model should be used (Wooldridge, 2010). Finally, the significance of the coefficients was evaluated at the 1%, 5% and 10% levels. The fixed effects panel regression was also used in the recent Jordanian studies of EM (Alharasis & Alshdaifat, 2026).

5. Results

5.1 Descriptive statistics

Table 3 presents the descriptive statistics of the main variables of the study for the 630 firm-year observations.

Table 3. Descriptive statistics (N = 630)

Variable	Min	Max	Mean	Std. dev.
----------	-----	-----	------	-----------

Variable	Min	Max	Mean	Std. dev.
AMJM	-0.04	0.45	0.22	0.34
ACIND	0.00	1.00	0.39	0.49
ACSIZE	3.00	7.00	3.41	0.90
CFO (natural log)	2.59	14.03	7.99	0.89
ROE	-0.41	0.39	0.09	0.89
ROA	-0.33	0.43	0.06	1.94
FSIZE (natural log)	4.59	14.15	11.03	0.89
LEV	0.09	0.47	0.21	0.88

As shown in Table 3, the mean of AMJM is 0.22, and the values range from -0.04 to 0.45. This indicates that the Jordanian industrial companies use the discretionary accruals to a considerable level, and that there is a clear variation between the companies in the practice of EM. Regarding the AC independence, the mean is 0.39, which means that on average around 39% of the AC members are independent, and the range from 0.00 to 1.00 shows that some companies had no independent member in the AC during some years, while other companies had a fully independent AC. It should be noted that this average is below the majority of independent members that is required by the 2017 instructions, and this indicates that the compliance with the independence requirement was not complete during the period of the study.

As for the AC size, the mean is 3.41 members, and the values range from 3 to 7 members. This result shows that the companies comply with the minimum of three members, and that most of them keep the committee close to this minimum. With regard to the control variables, the mean of ROE is 0.09, the mean of ROA is 0.06, and the mean of leverage is 0.21, which means that the Jordanian industrial companies depend on debt in a moderate way.

5.2 Diagnostic tests

Before estimating the model, the assumptions of the regression were examined. Table 4 presents the values of skewness and kurtosis after transforming the data, and all the values are below the absolute value of 2, which indicates that the distribution of the data is acceptable (Pallant, 2016). In addition, the histogram of the residuals of AMJM showed a bell shape, and this supports the normality of the residuals.

Table 4. Normality test after transformation

Variable	Skewness	Kurtosis
AMJM	-0.368	1.123
ACIND	0.247	-0.803
ACSIZE	1.639	0.691
CFO	-1.392	1.188

Variable	Skewness	Kurtosis
ROE	1.747	-1.374
ROA	-1.387	1.188
FSIZE	1.401	1.156
LEV	1.156	1.283

The multicollinearity was examined by the variance inflation factor (VIF) and the tolerance. Table 5 shows that all the VIF values are below 10, and all the tolerance values are above 0.10. Moreover, the highest VIF among all the regressors of the model, including the governance controls, is 3.775 (institutional ownership). Therefore, multicollinearity is not a problem in the model.

Table 5. Multicollinearity test

Variable	VIF	Tolerance (1/VIF)
ACIND	2.836	0.353
ACSIZE	1.729	0.578
CFO	2.311	0.432
ROE	2.211	0.470
ROA	1.531	0.650
FSIZE	1.210	0.892
LEV	1.951	0.530

Regarding the heteroscedasticity, the Breusch-Pagan/Cook-Weisberg test gave a $\chi^2(1)$ of 0.341 with a p-value of 0.491, and accordingly the null hypothesis of constant variance was accepted. As for the autocorrelation, the Breusch-Godfrey LM test with one lag gave a χ^2 of 2.419 ($df = 1$) with a p-value of 0.127, which means that the null hypothesis of no serial correlation was accepted. Finally, the Hausman test gave a $\chi^2(7)$ of 103.12 with a p-value of 0.0000, and therefore the null hypothesis was rejected and the fixed effects model was selected as the appropriate model for testing the hypotheses. Table 6 summarises these tests.

Table 6. Heteroscedasticity, autocorrelation and model selection tests

Test	Statistic	p-value	Conclusion
Breusch-Pagan/Cook-Weisberg	$\chi^2(1) = 0.341$	0.491	Constant variance
Breusch-Godfrey LM (lag 1)	$\chi^2(1) = 2.419$	0.127	No serial correlation
Hausman	$\chi^2(7) = 103.12$	0.0000	Fixed effects model

5.3 Regression results

Table 7 presents the results of the fixed effects regression of AMJM on the characteristics of the AC and the control variables.

Table 7. Fixed effects regression results (dependent variable: AMJM)

Variable	Expected sign	Coefficient (B)	Std. err.	p-value
----------	---------------	-----------------	-----------	---------

Variable	Expected sign	Coefficient (B)	Std. err.	p-value
ACIND	–	-0.15***	0.05	0.004
ACSIZE	–	-0.01	0.06	0.972
CFO		0.02	0.04	0.677
ROE		-0.14***	0.04	0.001
ROA		0.14***	0.03	0.000
FSIZE		0.28***	0.03	0.000
LEV		0.19***	0.02	0.000
Governance controls		Included		
Firm fixed effects		Included		
Observations		630		
Number of companies		63		
F-statistic		91.30		0.000
R-squared		0.613		

Note: *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively. The governance controls are the board size, board independence, board meetings, CEO duality, AC meetings, AC financial expertise, managerial ownership, family ownership and institutional ownership; their coefficients are not reported for brevity.

As shown in Table 7, the model is significant ($F = 91.30$, $p = 0.000$), and the R-squared is 0.613, which means that the variables of the model explain around 61.3% of the variation in the EM of the Jordanian industrial companies.

With regard to H1, the coefficient of the AC independence is negative and significant at the 1% level ($B = -0.15$, $p = 0.004$). This result means that increasing the proportion of independent members in the AC is associated with a decrease in the discretionary accruals; in other words, a more independent AC limits the ability of the managers to manage earnings. Accordingly, H1 is supported.

As for H2, the coefficient of the AC size is negative, but it is very small and not significant ($B = -0.01$, $p = 0.972$). This result indicates that the number of AC members has no effect on the level of EM in the Jordanian industrial companies, and that increasing the size of the committee does not reduce the discretionary accruals. Therefore, H2 is not supported.

Regarding the control variables, the operating cash flow has no significant effect on EM ($B = 0.02$, $p = 0.677$). The ROE has a negative and significant effect on EM ($B = -0.14$, $p = 0.001$), while the ROA has a positive and significant effect ($B = 0.14$, $p = 0.000$). Moreover, the firm size ($B = 0.28$, $p = 0.000$) and the leverage ($B = 0.19$, $p = 0.000$) have positive and significant effects on EM, and this is consistent with the argument that the companies with higher debt have more incentives to manage earnings in order to avoid violating the debt covenants.

Table 8 summarises the results of the hypotheses testing.

Table 8. Summary of the hypotheses testing

Hypothesis	Expected sign	Result	Decision
H1: AC independence → EM	–	Negative, significant ($p = 0.004$)	Supported
H2: AC size → EM	–	Negative, not significant ($p = 0.972$)	Not supported

6. Discussion

6.1 Audit committee independence and earnings management

The negative and significant effect of the AC independence on EM is consistent with the agency theory, which suggests that independent monitors are more objective and have more incentives to protect the interests of the shareholders (Fama & Jensen, 1983; Jensen & Meckling, 1976). In practice, the independent AC members have no economic dependence on the management, and for this reason they are more ready to ask difficult questions about the accounting estimates, such as the provisions, the impairment and the recognition of revenues, which are the main sources of the discretionary accruals. Moreover, the independent members care about their reputation in the market for directors, and discovering EM in a company that they monitor may damage this reputation.

This result is consistent with the evidence from the developed markets, such as Klein (2002) and Bédard et al. (2004), and with the meta-analysis of Lin and Hwang (2010). In addition, it is consistent with the studies in emerging markets that found a negative effect of AC independence on EM (Ngo & Le, 2021; Nikulin et al., 2022). In the Jordanian context, the result supports the finding of Kharashgah et al. (2019), who reported a negative relationship between AC independence and real EM, and it extends this finding to accrual-based EM in the industrial sector. On the other hand, the result is different from the finding of Hamdan et al. (2013), who did not find a significant effect of AC independence on earnings quality in Jordan. The result is also in line with the recent evidence of Musa et al. (2025), who found that the independent directors in the AC reduce real EM, and with Hedfi (2026), who showed that the AC independence plays a significant role in the relationship between the board characteristics and EM. However, the result is different from the recent finding of Taleb et al. (2025) in the neighbouring Palestinian market, where the AC characteristics largely failed to reduce EM.

The difference between the current result and the result of Hamdan et al. (2013) may be explained by the development of the regulatory framework in Jordan. The study of Hamdan

et al. (2013) used data from the period when the governance code was mainly voluntary, while the current study covers the period from 2013 to 2022, which includes the introduction of the mandatory 2017 Corporate Governance Instructions (Ananzeh, 2024). These instructions put clear requirements on the independence of the AC, and they require the committee to be chaired by an independent member (Jordan Securities Commission, 2017). Therefore, it is possible that the increase in the regulatory pressure made the independence of the members more real, and this is reflected in the ability of the AC to limit EM. It should be noted, however, that the mean of the AC independence (0.39) is still below the majority required by the instructions, which means that there is still room for improving the compliance. This explanation is also supported by the recent Jordanian evidence that EM decreased after the implementation of the reporting reforms (Alharasis & Alshdaifat, 2026).

6.2 Audit committee size and earnings management

The insignificant effect of the AC size on EM means that increasing the number of AC members does not improve its monitoring of the financial reporting in the Jordanian industrial companies. This result does not support the argument of the agency theory and the resource dependence view that a larger committee has more resources and more expertise for monitoring (Bédard et al., 2004; Lin et al., 2006). However, the result is consistent with several previous studies that did not find a significant relationship between the AC size and EM (Xie et al., 2003), and it is consistent specifically with the evidence from Jordan (Hamdan et al., 2013; Kharashgah et al., 2019). On the other hand, the result is different from Musa et al. (2025), who found that the larger AC reduces real EM in the Islamic banks, and this difference may be explained by the different sector and by the small variation of the AC size in the Jordanian industrial companies. Moreover, the Islamic banks use specific instruments, and the interest-free financial instruments have their own measurement problems (Al-Zaqeba & Basheti, 2024), and this makes the comparison between the two sectors more difficult.

There are several possible explanations for this result. Firstly, the descriptive statistics showed that most of the companies keep the AC close to the minimum of three members (mean = 3.41), and this small variation in size limits the ability of the AC size to explain the differences in EM between the companies. Secondly, in the companies with concentrated family ownership, the additional AC members may be selected by the controlling shareholders, and in this case increasing the size does not add an independent view to the

committee, but it may add more members who are close to the management (Elagha et al., 2025). This explanation is consistent with the recent evidence that the family control increases the earnings manipulation in the emerging markets (Ali et al., 2026), and with the recent studies that treat the concentrated ownership as a moderator of the effect of the AC characteristics on EM (Alqudah, 2026). Thirdly, a larger committee may face problems of coordination and diffusion of responsibility, which can offset the benefits of the additional resources (Vafeas, 2005).

When the results of the two hypotheses are taken together, it can be concluded that the effectiveness of the AC in the Jordanian industrial companies depends on the quality of its composition, which is reflected in the independence, more than on its structure, which is reflected in the number of members. In other words, the independent members make the difference, and simply increasing the size of the committee does not make it a better monitor. This conclusion is in line with the argument that, in emerging markets with weak enforcement, the governance mechanisms may be adopted in a formal way, and only the mechanisms that change the incentives of the monitors can have a real effect on the financial reporting (Almarayeh et al., 2022).

6.3 Control variables

With regard to the control variables, the positive effect of the leverage is consistent with the debt covenant hypothesis, where the companies that are close to violating the debt agreements have more incentives to increase the reported earnings. The positive effect of the firm size may be explained by the greater complexity of the operations and the accounting estimates in the larger industrial companies, and this complexity gives the managers more space for discretion. As for the opposite signs of ROE and ROA, they may reflect the effect of the capital structure, because ROE and ROA differ mainly by the leverage, which is also included in the model. For this reason, the coefficients of these two variables should be interpreted with caution.

7. Conclusion

7.1 Summary of the findings

This study examined the effect of the AC independence and the AC size on the EM of the industrial companies listed on the ASE in Jordan. Based on a balanced panel of 63 companies during the period from 2013 to 2022 (630 firm-year observations), and by using the

discretionary accruals of the Modified Jones Model and the fixed effects regression, the study found that the AC independence has a negative and significant effect on EM, while the AC size has no significant effect. Accordingly, the study concludes that the independence of the members is the characteristic that makes the AC an effective monitor of the financial reporting in the Jordanian industrial companies, and that the number of members alone does not improve the monitoring.

7.2 Theoretical implications

The findings support the agency theory regarding the role of independent monitors in reducing the opportunistic behaviour of the managers. At the same time, the findings show that not all characteristics of the AC play the same role, and that in emerging markets with concentrated ownership, the characteristics that change the incentives of the members (such as the independence) are more important than the characteristics that only increase the resources of the committee (such as the size). Therefore, the study suggests that future studies should not treat the characteristics of the AC as equal components of one construct, but they should examine each characteristic separately in the light of the institutional context. This suggestion is consistent with Rampershad (2026), who argued that the effectiveness of the AC depends on several interrelated drivers, and that the previous quantitative studies which depend on simple proxies gave inconsistent results.

7.3 Practical implications

The findings have several practical implications. Firstly, for the JSC, the results show that the independence requirements in the 2017 instructions are important, and the JSC should focus on monitoring the real compliance with these requirements, especially since the average proportion of independent members in the sample is below the required majority. In addition, the JSC may consider stricter criteria for defining the independent member, in order to reduce the influence of the controlling shareholders on selecting these members. The JSC may also consider the tenure of the AC members, since the recent evidence shows that a very long tenure may weaken the monitoring of the committee (Kohlbeck & Wang, 2025). Secondly, for the boards of directors, the results suggest that the improvement of the AC should be done by appointing truly independent members, and not by increasing the number of committee members. In this regard, the selection and the development of the qualified members can be supported by the HRM practices, which were examined as drivers of the quality management and the sustainable performance in the Jordanian organizations (Ababneh et al., 2024;

Aloqaily et al., 2024), and by the effective decision-making and the strategic flexibility of the board (Hamour et al., 2023). Thirdly, for the investors and the external auditors, the proportion of independent members in the AC can be used as an indicator of the quality of the reported earnings of the Jordanian industrial companies.

7.4 Limitations and future research

The study has some limitations, and these limitations open the way for future research. Firstly, the study is limited to the industrial sector, and the results may not be generalised to the financial sector, which follows different regulatory rules. Secondly, EM was measured only by the Modified Jones Model, and future studies can use other measures, such as the performance-matched discretionary accruals of Kothari et al. (2005) or the measures of real EM, in order to check the robustness of the results. Thirdly, the independence was measured based on the classification disclosed by the companies, and this classification may not reflect the real independence of the members, for example when there are family or business relationships that are not disclosed. Fourthly, the relationship between the characteristics of the AC and EM may be affected by endogeneity, since the companies with lower EM may choose to appoint more independent members, and future studies can use lagged variables or the generalised method of moments (GMM) to deal with this problem. In this regard, recent studies used the GMM and the two-stage least squares (2SLS) to address the endogeneity in the relationship between the AC and EM (Hedfi, 2026; Taleb et al., 2025). Finally, future studies can examine whether the effect of the AC independence changed after the 2017 instructions, or whether it depends on the quality of the external auditor and the level of family ownership. Moreover, future studies can examine other attributes of the AC, such as the status and the gender diversity of the members (Rudyanto & Kusnadi, 2025) and the tenure of the members. In addition, the sample period includes the COVID-19 pandemic, which affected the supply chains and the competitive position of the companies (Al-Zaqeba et al., 2022), and future studies can examine whether the pandemic changed the level of EM. Furthermore, future studies can examine whether the AI-based tools, which were proposed for reducing the tax evasion (Alseikh et al., 2026) and for analysing the customs digital indicators (Qahman et al., 2026), can help the AC in detecting EM, since the AI is reshaping the finance (Thosony, 2026). The adoption of such tools depends on the digital infrastructure (Alzeyoudi & Ineizeh, 2025), on the conditions of the adoption of the AI-enabled systems (Qahman et al., 2025), and on the digital skills of the users (Hazaimah, 2025).

References

- Ababneh, A. M. D., Jarah, B. A. F., Al-Kharabsheh, A., Al-Zaqeba, M. A. A., & Basheti, I. (2024). The role of human resources management in the development of total quality management in the public and private sectors in Jordan. *Humanities and Social Sciences Letters*, 12(2), 319–330.
- Abbadi, S. S., Hijazi, Q. F., & Al-Rahahleh, A. S. (2016). Corporate governance quality and earnings management: Evidence from Jordan. *Australasian Accounting, Business and Finance Journal*, 10(2), 54–75.
- Abbott, L. J., Parker, S., & Peters, G. F. (2004). Audit committee characteristics and restatements. *Auditing: A Journal of Practice & Theory*, 23(1), 69–87.
- Alhadab, Y., Ali, R., & Sapar, R. (2025a). Corporate governance determinants of bank profitability and market valuation in Jordan. *International Journal of Digital Accounting and Fintech Sustainability*, 2(2). <https://doi.org/10.70568/IJDAFS.2.2.3>
- Alhadab, Y., Ali, R., Sapar, R., & Mujahed, M. M. (2025b). Financial technology adoption and bank financial performance: Evidence from Jordan. *International Journal of Digital Accounting and Fintech Sustainability*, 2(2). <https://doi.org/10.70568/IJDAFS.2.2.5>
- Alharasis, E. E., & Alshdaifat, S. M. (2026). Evaluating earnings management before and after the implementation of the IFRS-XBRL taxonomy: Evidence from Jordan. *Corporate Governance: The International Journal of Business in Society*. Advance online publication. <https://doi.org/10.1108/CG-07-2025-0480>
- Alhazaimeh, A., Palaniappan, R., & Almsafir, M. (2014). The impact of corporate governance and ownership structure on voluntary disclosure in annual reports among listed Jordanian companies. *Procedia - Social and Behavioral Sciences*, 129, 341–348.
- Ali, M. H., Rahman, F., Ara, R., & Hossain, M. M. (2026). Corporate political connections and earnings management in a unique regulatory setting: Do audit quality and family control matter? *Journal of Accounting in Emerging Economies*, 16(2), 262–296. <https://doi.org/10.1108/JAEE-07-2025-0379>
- Almarayeh, T., Abdullatif, M., & Aibar-Guzmán, B. (2022). The role of audit committees in mitigating earnings management: Evidence from Jordan. *Journal of Accounting in Emerging Economies*, 12(5), 882–907.
- Al-Omari, A. I. M., Zaqeba, M., Abdul Hami, S., & Johari, F. B. (2025). The mediating role of tax awareness in the relationship between digital transformation and sustainable tax compliance. *Universal Journal of Green Human Resources and Sustainable Humanities*, 2(1). <https://doi.org/10.70568/UJGHRSH.2.1.5>
- Aloqaily, A. N., Qawasmeh, E. F., Masa'd, F. M., Alrousan, A., & Al-Zaqeba, M. A. A. (2024). The mediating effect of green culture on the relationship between GHRM and green sustainable performance in Jordanian SME logistics companies. *International Journal of Advanced and Applied Sciences*, 11(10), 232–240.
- Alqudah, A. M. (2026). Toward enhancing financial integrity: Decoding the impact of audit committee characteristics on earnings management in emerging markets – the moderator role of concentrated ownership. *Cogent Business & Management*, 13(1), Article 2618307. <https://doi.org/10.1080/23311975.2026.2618307>
- Alseikh, A. S. H., Al-Zaqeba, M. A. A., & Muhammad, I. (2026). The role of artificial intelligence in reducing tax evasion: An implementation strategy. *Corporate and Business Strategy Review*, 7(1), 112–122. <https://doi.org/10.22495/cbsrv7i1art10>
- Alsmadi, K. M. N., Salleh, S. B., & Laili, N. H. B. (2025a). An AI-based analytical approach: Corporate governance and dividend decisions in Jordan. *Universal Journal of Future Intelligence: Innovations and Artificial Intelligence*, 2(2). <https://doi.org/10.70568/UJFIIAI.2.2.6.25>
- Alsmadi, K. M. N., Salleh, S. B., & Laili, N. H. B. (2025b). Audit quality as an adjunct digital governance mechanism: An evidence from dividend policy in Jordan. *International Journal of Digital Accounting and Fintech Sustainability*, 2(2). <https://doi.org/10.70568/IJDAFS.2.2.2>
- Altaamneh, Y., Al-Zaqeba, M. A. A., Jarah, B. A. F., AlJabali, A. M. A., & Alazzam, F. A. F. (2026). Digital service transformation and FinTech adoption in banking: Implications for operational performance in Jordan. *Journal of Logistics, Informatics and Service Science*, 13(7), 192–206. <https://doi.org/10.33168/JLISS.2026.0712>

- Al-Zaqeba, M. A. A. (2025). Taxation and customs strategies towards enhancing environmental responsibility. In *Green finance and energy transition: Innovation, legal frameworks and regulation* (pp. 595–603). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-75960-4_53
- Al-Zaqeba, M. A. A., & Al-Rashdan, M. (2020). The effect of attitude, subjective norms, perceived behavioral control on tax compliance in Jordan: The moderating effect of customs tax. *International Journal of Scientific & Technology Research*.
- Al-Zaqeba, M. A. A., & Basheti, I. A. (2024). Measurement problems in interest-free financial instruments. *Pakistan Journal of Life and Social Sciences*, 22(1), 5558–5575.
- Al-Zaqeba, M., Al-Khawaja, H. A., & Jebril, I. H. (2022). The effect of supply chain management on competitive advantage: COVID-19. In *2022 ASU International Conference in Emerging Technologies for Sustainability and Intelligent Systems (ICETSYS)* (pp. 131–136). IEEE.
- Alzeyoudi, M. A. R. K., & Inezeh, N. I. A. A. (2025). The impact of artificial intelligence on innovation: The moderating role of digital infrastructure in the UAE. *Universal Journal of Future Intelligence: Innovations and Artificial Intelligence*, 2(2). <https://doi.org/10.70568/UJFIIAI.2.2.1>
- Alzoubi, E. S. S. (2019). Audit committee, internal audit function and earnings management: Evidence from Jordan. *Meditari Accountancy Research*, 27(1), 72–90.
- Ananzeh, H. (2024). The evolution of corporate governance in Jordan: A study of pre- and post-2017 reforms. *International Journal of Digital Accounting and Fintech Sustainability*, 1(2). <https://doi.org/10.70568/IJDAFS.1.2.3>
- Attia, E. F., Almoneef, A., Abdou, H. A., & Yassen, S. O. M. (2026). Audit committee effectiveness and real earnings management: Ownership structure as a moderator in emerging market. *Cogent Business & Management*, 13(1), Article 2656528. <https://doi.org/10.1080/23311975.2026.2656528>
- Barua, A., Kim, J. H., & Yi, S. (2025). Accruals management to meet or beat earnings performance of peer firms. *Accounting & Finance*, 66(1), 80–105. <https://doi.org/10.1111/acfi.70119>
- Bédard, J., Chtourou, S. M., & Courteau, L. (2004). The effect of audit committee expertise, independence, and activity on aggressive earnings management. *Auditing: A Journal of Practice & Theory*, 23(2), 13–35.
- Bouaziz, D., Moalla, M., & Jarboui, A. (2025). Does external audit quality moderates the relationship between audit committee effectiveness and earnings management? Evidence from France. *EuroMed Journal of Business*. Advance online publication. <https://doi.org/10.1108/EMJB-06-2024-0153>
- Dakhlallah, M. M., Rashid, N., Abdullah, W. A. W., & Al Shehab, H. J. (2021). The moderate effect of audit committee independence on the board structure and real earnings management: Evidence from Jordan. *Journal of Contemporary Issues in Business and Government*, 27(2), 124.
- Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *The Accounting Review*, 70(2), 193–225.
- Elagha, T. B. J., Al-Zaqeba, M. A. A., Wahid, M. A. B., & Harun, M. S. B. (2025). The moderating effect of family ownership concentration between board of directors effectiveness and risk management disclosure in Palestine Stock Exchange. *International Journal of Digital Accounting and Fintech Sustainability*, 2(1). <https://doi.org/10.70568/IJDAFS.2.1.2>
- Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *The Journal of Law and Economics*, 26(2), 301–325.
- Hamdan, A. M., Mushtaha, S. M., & Al-Sartawi, A. A. (2013). The audit committee characteristics and earnings quality: Evidence from Jordan. *Australasian Accounting, Business and Finance Journal*, 7(4), 52–80.
- Hamour, H. M. J. A., ALensou, J., Abuzaid, A., Alheet, A., Madadha, S., & Al-Zaqeba, M. (2023). The effect of strategic intelligence, effective decision-making and strategic flexibility on logistics performance. *Uncertain Supply Chain Management*, 11(2), 657–664.
- Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica*, 46(6), 1251–1271.
- Hazaimeh, Z. D. K. (2025). The degree of vocational education teachers' utilization of digital skills from their perspective in Qasabat Irbid. *International Journal of Pedagogy and Professional Human Development Insights*, 1(2). <https://doi.org/10.70568/IJPHDI.1.2.2>
- Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons*, 13(4), 365–383.

- Hedfi, C. (2026). Board nationality diversity and earnings management: The moderating effect of audit committee independence. Evidence from French listed companies. *Journal of Financial Reporting and Accounting*. Advance online publication. <https://doi.org/10.1108/JFRA-03-2025-0162>
- Jebril, I., Al-Zaqeba, M., Al-Khawaja, H., Obaidey, A. L. A. A., & Marashdah, O. (2024). Enhancing estate governance using blockchain technology through risk management in estate governance of business sustainability. *International Journal of Data and Network Science*, 8(3), 1649–1658.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360.
- Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, 29(2), 193–228.
- Jordan Securities Commission. (2017). *Instructions of corporate governance for shareholding listed companies for the year 2017*. Jordan Securities Commission.
- Kharashgah, K. A., Amran, N. A. B., & Ishak, R. B. (2019). The impact of audit committee characteristics on real earnings management: Evidence from Jordan. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 9(4), 84–97.
- Klein, A. (2002). Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics*, 33(3), 375–400.
- Kohlbeck, M., & Wang, L. (2025). Audit committee tenure, financial reporting quality, and auditor independence. *Managerial Auditing Journal*, 40(3), 303–327. <https://doi.org/10.1108/MAJ-06-2024-4374>
- Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, 39(1), 163–197.
- Li, X., Yan, Y.-C., & Zhou, H. (2025). Audit delay and accruals-based earnings management: Evidence from an emerging market. *Asian Review of Accounting*, 34(1), 217–244. <https://doi.org/10.1108/ARA-04-2024-0122>
- Lin, J. W., & Hwang, M. I. (2010). Audit quality, corporate governance, and earnings management: A meta-analysis. *International Journal of Auditing*, 14(1), 57–77.
- Lin, J. W., Li, J. F., & Yang, J. S. (2006). The effect of audit committee performance on earnings quality. *Managerial Auditing Journal*, 21(9), 921–933.
- Lüpsen, H. (2018). Comparison of nonparametric analysis of variance methods: A vote for van der Waerden. *Communications in Statistics: Simulation and Computation*, 47(9), 2547–2576.
- Maabreh, H. M. A., Che Abdul Rahman, M. R., & Jamil, A. H. (2026). The effect of earnings management on financial performance through tax avoidance in Jordan's tourism-linked service ecosystem. *Social Science Forum*, 10(9), 106–126. <https://doi.org/10.10118/SSFJ/2610907>
- Mangala, D., & Singla, N. (2023). Do corporate governance practices restrain earnings management in banking industry? Lessons from India. *Journal of Financial Reporting and Accounting*, 21(3), 526–552.
- Menon, K., & Williams, J. D. (1994). The use of audit committees for monitoring. *Journal of Accounting and Public Policy*, 13(2), 121–139.
- Mo'taz Amin, A.-S. (2013). Compliance with the principles of corporate governance: Different perspectives from Jordan. *Accounting and Management Information Systems*, 12(4), 553–578.
- Mousa, H., & Maabreh, A. (2024). The role of financial technology (FinTech) in promoting financial inclusion: A literature review. *International Journal of Digital Accounting and Fintech Sustainability*, 1(1). <https://doi.org/10.70568/IJDAFS.1.1.2>
- Musa, S., Masri, M., & Hamdan, M. (2025). Audit committee attributes and real earnings management of Islamic banks. *Journal of Islamic Accounting and Business Research*. Advance online publication. <https://doi.org/10.1108/JIABR-03-2024-0075>
- Ngo, D. N. P., & Le, A. T. H. (2021). Relationship between the audit committee and earning management in listed companies in Vietnam. *Journal of Asian Finance, Economics and Business*, 8(2), 135–142.
- Nikulin, E. D., Smirnov, M. V., Sviridov, A. A., & Bandalyuk, O. V. (2022). Audit committee composition and earnings management in a specific institutional environment: The case of Russia. *Corporate Governance*, 22(7), 1491–1522.

- Pallant, J. (2016). *SPSS survival manual: A step-by-step guide to data analysis using SPSS* (6th ed.). McGraw-Hill Education.
- Qahman, A. I., Alzaqebah, M., Jawarneh, S., Al-Zaqeba, M. A. A., Al-Taani, A. H. M., Aloqaily, A. N., & Almatrooshi, M. A. (2026). Design and development of an intelligent system based on artificial intelligence and machine learning using customs digital indicators. *International Journal of Data and Network Science*, 10(1), 251–264.
- Qahman, A. I. A., Dahlan, H. A., Hussin, M., & Al-Zaqeba, M. A. A. (2025). AI-enabled adaptive e-learning systems adoption in conflict zone: Case study of Palestinian schools. *TEM Journal*, 14(1), 789–804.
- Rampershad, A. (2026). Developing a hierarchical-relational conceptual framework for audit committee effectiveness. *Meditari Accountancy Research*. Advance online publication. <https://doi.org/10.1108/MEDAR-08-2025-3210>
- Rudyanto, A., & Kusnadi, Y. (2025). Audit committee status and gender diversity: Implications for real earnings management. *Finance Research Letters*, 86, Article 108433. <https://doi.org/10.1016/j.frl.2025.108433>
- Saroito, N. D. (2025). The effect of FinTech adoption and financial inclusion in emerging economies. *International Journal of Digital Accounting and Fintech Sustainability*, 2(1). <https://doi.org/10.70568/IJDAFS.2.1.3>
- Shubailat, O. M., Al-Zaqeba, M. A. A., Madi, A., & Alheet, A. F. (2024a). Analyzing the improvement of estate governance and management in Jordan using blockchain. *International Journal of Data and Network Science*, 8(2), 1059–1072.
- Shubailat, O., Al-Zaqeba, M., Madi, A., & Ababneh, A. (2024b). Customs intelligence and risk management in sustainable supply chain for general customs department logistics. *Uncertain Supply Chain Management*, 12(1), 387–398.
- Shubailat, O. M., Al-Zaqeba, M. A. A., Madi, A., & Khairi, K. F. (2024c). Investigation the effect of digital taxation and digital accounting on customs efficiency and port sustainability. *International Journal of Data and Network Science*, 8(1), 61–68.
- Shubailat, O., Madi, A., Al-Zaqeba, M. A. A., & Alown, B. (2025). A strategic approach to family connectedness and entrepreneurial intentions. *Corporate & Business Strategy Review*, 6(3), 160–169. <https://doi.org/10.22495/cbsrv6i3art15>
- Statista. (2022). *Jordan: Share of economic sectors in the gross domestic product*. Statista.
- Taleb, A., Abdelkarim, N., Saad, R., & Daraghma, Z. (2025). Audit committees and earnings management: The mediating effect of audit quality. *Corporate Governance: The International Journal of Business in Society*. Advance online publication. <https://doi.org/10.1108/CG-03-2025-0163>
- Thosony, J. R. (2026). Global finance transformation driven by AI: Reshaping the future with FinTech and emerging technologies. *Universal Journal of Future Intelligence: Innovations and Artificial Intelligence*, 3(1). <https://doi.org/10.70568/UJFIIAI.3.1.5>
- Vafeas, N. (2005). Audit committees, boards, and the quality of reported earnings. *Contemporary Accounting Research*, 22(4), 1093–1122.
- Van der Waerden, B. L. (1952). Order tests for the two-sample problem and their power. *Indagationes Mathematicae*, 14, 453–458.
- Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data* (2nd ed.). MIT Press.
- Xie, B., Davidson, W. N., & DaDalt, P. J. (2003). Earnings management and corporate governance: The role of the board and the audit committee. *Journal of Corporate Finance*, 9(3), 295–316.
- Zehri, F., & Zgarni, I. (2020). Internal and external corporate governance mechanisms and earnings management: An international perspective. *Accounting and Management Information Systems*, 19(1), 33–64.
- Zhao, H., Khaliq, N., Li, C., & Oláh, J. (2024). In quest of perceived transaction cost's impact on fintech users' intention: The moderating role of situational factors. *Humanities and Social Sciences Communications*, 11(1). <https://doi.org/10.1057/s41599-024-03257-1>
- Zobi, M., Al-Zaqeba, M., & Jarah, B. (2023). Taxation and customs strategies in Jordanian supply chain management: Shaping sustainable design and driving environmental responsibility. *Uncertain Supply Chain Management*, 11(4), 1859–1876.