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An Experimental Investigation of the Effect of Auditor Industry Specialization and Firm Risks on The Disclosure of Key Audit Matters in Audit Report

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Abstract

This research investigates the direct effect of auditor industry specialization and audited firm risks on the disclosure of key audit matters. The interaction effects of these two variables on the disclosure of key audit matters in the audit report are also being investigated in this study using a quasi-experimental design of 102 external auditors of Egyptian audit firms. Among the methods used for data analysis were descriptive statistics, the Kruskal- Wallis Test, and the Mann– Whitney Test to test the research hypotheses. Results show that auditor industry specialization and riskier clients significantly positively impact the disclosure of key audit matters. There is an interaction effect of the external auditor`s industrial specialization and audited firm risks on the disclosure of key audit matters in the audit report. These results highlight the need to provide useful information to various stakeholders. Therefore, our research highlights the necessity of modifying Egyptian auditing standards to comply with the International Auditing and Assurance Standards Board's recommendations regarding the audit report.

KeyWords: Auditor industry specialization, Audited firm risks, Audit reports, Disclosure of key audit matters.

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دراسة تجريبية عن تأثير كل من التخصص المهني للمراجع والمخاطر المرتبطة بالمنشأة على الإفصاح عن أمور المراجعة الرئيسية فى تقرير المراجعة

ملخص البحث

يهدف هذا البحث إلى اختبار الأثر المباشر لكل من التخصص المهني للمراجع الخارجي والمخاطر المرتبطة بالمنشأة محل المراجعة على الإفصاح عن أمور المراجعة الرئيسية بتقرير المراجعة، وكذلك دراسة الأثر المشترك لهذين المتغيرين على الإفصاح عن أمور المراجعة الرئيسية بتقرير المراجعة، وذلك من خلال إجراء دراسة شبه تجريبية على عينة تتكون من 102 مراجع حسابات بمنشآت المحاسبة والمراجعة المصرية، وتم تحليل البيانات بالإعتماد على أساليب الإحصاء الوصفي، واختبار كروسكال – والس واختبار مان– ويتني اللامعلمي لاختبار الفروض، وقد اظهرت نتائج الدراسة وجود تأثير إيجابي معنوي لكل من التخصص المهني لمراجعي الحسابات ومخاطر الشركة محل المراجعة على الإفصاح عن أمور المراجعة الرئيسية، وكذلك كشفت النتائج وجود تأثير تفاعلي للتخصص المهني لمراجعي الحسابات ومخاطر الشركة محل المراجعة على الإفصاح عن أمور المراجعة الرئيسية بتقرير المراجعة، وبوجه عام، تبرز هذه النتائج الحاجة إلى توفير معلومات مفيدة لمختلف أصحاب المصالح، ولذلك، يسلط هذا البحث الضوء على ضرورة إدخال بعض التعديلات على معايير المراجعة المصرية لتأخذ في الإعتبار ما أقره مجلس معايير المراجعة والتوكيد الدولي من تعديلات على تقرير المراجعة.

الكلمات المفتاحية: التخصص المهني للمراجع، المخاطر المرتبطة بالمنشأة، تقارير المراجعة، الإفصاح عن أمور المراجعة الرئيسية.

1- Introduction

In audit practice, the primary means for auditors to communicate with the stakeholders of an audited entity is through the audit report, a formal document that represents the outcome of the audit process. The audit report presents the auditors' unbiased opinion on the accuracy and fairness of a company's financial statements. However, traditional audit reports have often been criticized for their limited communicative value (Gray et al., 2011; Asare & Wright, 2012; Vanstraelen et al., 2012), mainly due to their standardized language and structure. These reports provide limited insight, as international standard setters have noted that such formats lack user utility (IAASB, 2015; PCAOB, 2016). Users of financial statements need relevant and reliable information for effective decision-making, and audit firms contribute to this by verifying the accuracy of financial statements (Vaziri & Azadi, 2017). Continuous reforms in audit reporting are essential to ensure reliable communication between users of financial statements, the management of the firm, and external auditors. Therefore, amendments to specific auditing standards were introduced to reduce information asymmetry between auditors and users (Bédard et al., 2014).

In 2015, IAASB (The International Auditing and Assurance Standards Board) developed ISA 701, "Communicating Key Audit Matters in the Independent Auditor's Report." ISA 701 requires the disclosure of Key Audit Matters (KAMs) to bridge the information gap between auditors and users by disclosing the most significant audit issues encountered (IAASB, 2015). The European Union also adopted regulations requiring KAM disclosure (Deloitte, 2016).

ISA 701 defines KAMs as "matters of most significance in auditing current-period financial statements, as determined by the auditor's professional judgment" (Hegazy & Kamareldawla., 2021, p. 1026). Reporting KAMS by auditors means that they found issues in the financial statements that require further attention, such as a major client's management judgment that could impact the financial statements, unusual financial transactions that cause high financial risk or misstatement, and sections in the financial statements that required extra investigation because of their high risk. These issues emphasize challenges faced by au-

ditors in obtaining sufficient audit evidence or making substantial adjustments to audit strategies.

No local standard in Egypt mandates KAM disclosure, although Egyptian audit firms follow the Egyptian Standards on Auditing (ESAs), adapted from International Standards on Auditing (ISAs). Only the Big Four and a few internationally affiliated audit firms include KAMs in reports, especially for consolidated financial statements prepared under International Financial Reporting Standards (IFRS). This suggests a need for regulators and academics to prioritize understanding ISA 701 and enhancing Egyptian auditors' qualifications to implement this standard.

While KAM disclosure is mandated, studies indicate that the number and nature of KAMs rely on auditors' professional judgment, which is influenced by industry knowledge (e.g., He, 2021). In this regard, auditor specialization, which refers to the auditor's experience and understanding (knowledge) of the specific client's industry, business and operations (Thongchai & Ussahawanitchakit, 2015), was mentioned as one of the factors impacting the disclosure of KAMs (e.g., He, 2021). They argued that the auditor's industry specialization could enhance the quality of the information in the audit report, benefiting financial statements users' decisions. Auditors with industry-specific expertise are better equipped to evaluate and disclose high-risk areas, including potential fraud indicators, within KAMs due to their familiarity with the client's industry sector.

Also, previous studies argued that client characteristics could impact auditors' KAM disclosures (Wu et al., 2016; Velte, 2018; Sierra- García et al., 2019). One of the client characteristics that impact KAM is firm risks, which refer to the firm's inability to accomplish its objectives or execute its strategies effectively. These risks, such as financial or operational risks, could arise from internal or external variables such as management strategies, exchange rate fluctuation, supply chain agility, and regulatory changes (Sun et al., 2024). The client's -specific risks and operational processes can lead auditors with expertise in that sector to better identify and disclose material misstatements due to fraud or error. By highlighting these risks, the auditor can reduce information asymmetry and offer valuable

insights to auditing report users (Camacho-Miñano et al., 2023). Accordingly, the auditor's industry specialization and knowledge of client risks may be critical to effective KAM disclosure. Additionally, stakeholders' expectations regarding these risks may influence the extent of KAM disclosure in the audit report.

In summary, prior studies indicate that KAM reporting is linked to the characteristics of both the client and the auditor. Nevertheless, empirical research examining the effect of auditor industry specialization and firm-specific risks on KAM disclosure is limited, particularly in the Arab world. Consequently, this study explores how firm risks and auditor industry specialization—two key yet under-researched elements of the audit process—affect KAM disclosures.

The study will use the signaling theory as the underpinning theory because it suggests that the extent of KAM disclosure may be perceived as a signal of the auditor's diligence in evaluating client transactions. To this end, this study attempts to answer the following research questions: (1) Does auditor industry specialization influence KAM disclosure? (2) Does firm-specific risk affect KAM disclosure? And (3) Is there an interaction between auditor industry specialization and firm risk on KAM disclosure?

The results of this study have several contributions. First, they expand the literature on auditor characteristics and audit quality by examining how auditor industry specialization and firm risks jointly impact KAM disclosure. This paper is one of the first studies to investigate these dynamics in an Arab context, filling a notable research gap. Second, the findings may guide standard setters on possible adjustments to ISA 701, enhancing KAM disclosure clarity and effectiveness. Finally, the study provides insights for regulators and auditors, highlighting factors that could influence KAM communication.

The remainder of this paper is organized as follows: Section Two covers theoretical aspects, Section Three reviews relevant literature and formulates hypotheses, Section Four describes the methodology, Section Five presents the results and discusses them, and Sections Six and Seven provide conclusions and suggest directions for future researches.

2-Theoretical Framework

This study builds its theoretical framework on signaling theory. Signaling theory gives auditors insights into how they might send signals to communicate their often-invisible underlying qualities, as much of their work remains unnoticed by interested stakeholders (Suttipun, 2020b).

Signaling theory sheds light on auditors' behavior in the financial reporting process (Connelly et al., 2011; Mwintome & Alon, 2022). It aims to bridge the information gap between less-informed and more-informed parties by addressing information asymmetry. This theory is often applied in imperfect markets to examine how those with private information signal the unobservable quality of their services or products to others with limited information (Connelly et al., 2011). KAM disclosures signal stakeholders about a firm's risk and the quality of its audit. In the context of this research, auditors serve as the signalers, Key Audit Matters (KAMs) function as the signals, and stakeholders—such as shareholders and management—act as the receivers.

Reducing information asymmetry is essential for safeguarding stakeholders' interests and providing investors with valuable insights for decision-making (Plumlee et al., 2015). The main goal of disclosing KAMs in the audit report is to improve its informational value and relevance. KAMs highlight key areas that are particularly significant to the business. The professional judgment auditors use to identify KAMs can greatly influence the expertise of practitioners, users of financial statements, and external stakeholders (Li et al., 2022). By addressing information asymmetry, KAMs help external stakeholders gain access to critical information about the audited firm. When firms disclose risks, they provide valuable insights into their environmental and sustainability performance, informing creditors, investors, and other stakeholders, thus reducing uncertainty. In this way, KAM disclosures play a key role in reducing information asymmetry, enhancing market efficiency, and ensuring stakeholders can access crucial information about the firm (Wang et al., 2022).

Finally, auditors specializing in a particular industry have valuable expertise that enables them to identify key risks in their KAM disclosures. For firms facing higher levels of risk, these disclosures become more important, as they help assure stakeholders about audit quality. By combining auditors' industry expertise with insights about a firm's risks, auditors can make KAMs meaningful and relevant signals for users of financial statements. To this end, signaling theory is suitable to build the theoretical framework of this study.

3- Previous Studies and Hypotheses Development

3-1 Auditor Industry Specialization and The Disclosure of KAMs

Previous studies examined the influence of auditor experience and qualifications on audit reports and audit quality (Asmara, 2016; Zahmatkesh & Rezazadeh, 2017). Auditors must submit an audit report that achieves the standards setters` objectives and satisfies the stakeholders' requirements. Industry specialization is important for performing audit duties and accomplishing the required audit quality. Prior studies investigated the impact of auditor experience and qualification on audit reports and quality (Asmara, 2016; Zahmatkesh & Rezazadeh, 2017). Experienced auditors in certain industries are expected to provide high-quality audit reports. Previous studies show that auditor industry specialization can affect the disclosure of KAMs. Sierra- Garcia et al. (2019) conclude that industry specialization significantly affected auditors' ability to recognize and disclose KAMs. Similarly, Pinto & Morais., (2019), Shao., (2020), and He., (2021) found a positive effect of industry specialization on the disclosure of KAMs in the audit report since industry-specialized auditors have long experiences and deep understandings of how general and specific accounting guidelines are applied to the specific client's industry. Likewise, Hegazy et al. (2022) explained the positive impact of industry specialization and auditors' professional qualifications on the ability of auditors to identify and disclose KAMs. They are using a survey based on actual audit case studies extracted from clients` management letters from an audit firm with international affiliation.

Contrarily, the study of Mwintome & Alon., (2022) investigates how auditor industry specialization is associated with reporting KAMs, using data collected manually for the Norwegian listed companies from 2016-2018. They found a negative impact of industry specialization on the disclosure of KAMs in the audit report. Also, Jiang & Olesen (2022) indicated that fewer industry-specialized audit partners would disclose more KAMs. According to signaling theory, auditors who disclose fewer KAMs may signal their expertise to external stakeholders—particularly shareholders. However, a more significant number of disclosed KAMs might also serve as a signal to shareholders regarding the auditors' thoroughness and the justification for audit fees. Given these opposing perspectives, the impact of industry-specialized auditors on the KAM disclosures could vary in either direction.

In summary, the literature reveals mixed findings on the association between industry specialization and auditors' ability to recognize and disclose KAMs. This suggests that predicting whether industry-specialized auditors will disclose a higher or lower number of KAMs is challenging. Industry expertise may lead auditors to signal their underlying proficiency by disclosing more critical KAMs, yet fewer disclosures might also demonstrate expertise. Consequently, the following hypothesis is proposed to investigate the effect of auditor industry specialization on KAM disclosure:

H_{01}: *There is no a significant difference in the level of KAM disclosure between specialized and non-specialized auditors.*

3-2 Audited Firm Risks and The Disclosure of KAMs

Regarding the effect of a firm's risk on the disclosure of KAMs, Kranenburg & Waard (2021) found that auditors are more likely to disclose KAMs in audit reports when the client has high risk. According to the agency theory, the auditors of relatively risky clients performed their role by mitigating the information asymmetry between the client and the users of the audit reports by being more transparent about the KAMs. Furthermore, prior literature supports that client characteristics are one of the main factors affecting the auditor's opinion con-

cerning KAM (Wu et al., 2016; Velte, 2018; Sierra- García et al., 2019). Disclosing solvency issues and losses is a significant indicator of the auditor's opinion. Literature shows that corporations with financial problems indicate increased risk (Ye et al., 2011). Overall, higher leverage means a higher financial risk. As the client's financial risk increases, auditors tend to audit the client more comprehensively, putting more effort into the client. An increase in audit efforts to reduce the auditor's responsibility is expected to improve the auditing procedures and thus further expand the disclosure of KAMs (Pinto & Morias, 2019). At the same time, some literature has found a positive relationship between the high financial leverage of the enterprise and the disclosure of KAMs (Bédard et al., 2014; Ferreira & Morais., 2019; Pinto & Morais., 2019; Hussin et al., 2022; Mah'd & Mardini., 2022; Chen et al., 2024). As a firm's leverage increases, company managers have increased incentives to adopt accounting policies that reduce costs but, on the other hand, increase the risk in certain areas.

Besides the client's leverage, auditors are expected to disclose more KAMs for complex clients. In more complex firms, there are more risky areas. Therefore, auditors tend to put more effort into clients due to increased risk. The increase in audit effort is expected to result in improved audit procedures and thus could lead to an increase in the disclosure of KAMs (Kitiwong & Srijunpetch., 2019; Pinto & Morais., 2019; Ferreira & Morais., 2019; Li., 2020; Suttipun., 2020a; Wuttichindanon & Issarawornrawanich., 2020; Kranenburg & Waard., 2021; Özcan., 2021; Hussin et al., 2022). Contrarily, the Sierra- Garcia et al. (2019) results indicated a negative relationship between the complexity of the client's activity and the disclosure of KAMs in the audit report. At the same time, Karmańska (2020) concluded that the activity's complexity (expressed by the number of sectors) had no significant effect on the number of KAMs disclosed.

Furthermore, Ye et al. (2011) suggest that companies with losses point to indications of greater risk, and, therefore, auditors tend to audit those companies in more detail, which increases the auditors' effort. This increase in auditors' efforts to reduce their liabilities improves audit procedures and, therefore, the identification and disclosure of KAMs. Auditors should, therefore, pay more attention.

Hence, more indebted companies are predicted to disclose more KAMs. In addition, Velte., (2018); Ferreira & Morais., (2019); Pinto & Morais., (2019); Mah and Mardini., (2022); Suttipun., (2020a); Wuttichindanon & Issarawornrawanich. (2020); Venturini et al. (2023) reveal that profitability hurts the level of disclosure of KAMs, and auditors of less profitable companies with greater operational risks are likely to feel more pressure to disclose KAMs and maintain their independence.

Contrary findings have emerged as well. Genç and Erdem (2021) found a positive relationship between profitability, expressed as Return on Assets (ROA), and KAM disclosure, suggesting that higher profitability could prompt greater transparency about underlying causes within KAMs to create a positive impression of company performance and audit quality. However, Karmańska (2020) reported no significant relationship between profitability and KAM disclosures, and Ishak and Abidin (2018) similarly found no impact of profitability on KAM disclosures among listed companies in Malaysia.

Considering the above synthesis of the literature, it is apparent that there are mixed findings regarding the association between audited firm risks and KAM disclosures. Firm risk includes characteristics such as liquidity (Gandía & Huguet, 2018), leverage (Sierra-Garcia et al., 2019), profitability (Chen et al., 2024), and solvency (Gandía & Huguet, 2021). Given that KAMs address significant risks, firm risk is expected to increase the number of disclosed KAMs. Accordingly, the following hypothesis is proposed:

H_{02}: There is no a significant difference in the level of KAM disclosure between firms with high and low risk.

3-3 The Interaction Effects of Auditor Industry Specialization and Audited Firm Risks on The Disclosure of KAMs

Auditor Industry Specialization provides a better understanding of firm risks and proposes auditing procedures to address them. The industry auditor has in-depth knowledge of the audit process tasks that enable him to make a professional judgment of high efficiency because of his experience with the nature of the

client's activity, as well as his efficient assessment, interpretation of the audit evidence and his accurate assessment of the company's risks, thus improving the quality of his professional judgment. Employing an empirical study involving a sample of auditors in Thailand, Sinchuen & Ussahawanitchakit., (2010) observed that the industry-specialized auditor has more knowledge about the risk of the audited company and is more effective in assessing the risks expected before planning the audit process that helps him improve the quality of his professional judgment, thereby improving the quality of the audit process and reducing the litigation risks. Sun & Liu. (2012) and Arthur et al. (2017) also found that the auditor's industrial specialization has the practical experience, understanding and knowledge of the client's enterprise industry and risk factors to efficiently complete the audit process, by improving the quality of his professional judgment as well as helping him to detect and evaluate firm risks, thus, improve its professional risk assessment provisions, thereby disclosing them as KAMs in the audit report.

Industry-specialized auditors usually concentrate on specific industries, which allows them to acquire critical client-specific knowledge and expertise and be familiar with many client transactions. Thus, industry-specific auditors with a strong understanding and expertise in specific industries may consider client risks as KAMs. In other words, industry-specialized auditors tend to disclose more KAM in the audit reports regarding inconsistent aspects of financial reports, considering that the auditor should define KAM by considering the areas with greater risks for the auditee. Alves Jr & Galdi, (2019); Sierra-García et al., (2019). The motivations of industry specialist auditors are to signal their expertise by disclosing firm risks through KAMs in the auditor's report to a wide range of stakeholders, including management, investors, regulators, and others.

In line with the signaling theory perspective, industry-specific auditors (signalers) may disclose firm risks such as KAMs to external users (receivers) to signal their thoroughness. The audit quality could be influenced by the extent of disclosure made by KAMs, which typically cover client-specific risks. Prior studies suggest that KAMs have a guiding influence on the information acquisition of

external users (Sirois et al., 2018; Moroney et al., 2021). Industry specialist auditors may consider disclosing KAMs as a viable signal expressing their underlying ability to provide high-quality audits.

On the other hand, Industry auditors, compared to non-specialist auditors, may be motivated to reduce the number of company risks reported as KAMs in audit reports. According to ISA 701, auditors must use professional judgment and skepticism in determining and selecting what constitutes a KAM (IAASB, 2015). To exercise sound judgment, auditors rely on their accumulated industry knowledge, which can allow them to communicate expertise by reporting fewer but more significant KAMs. Thus, industry-specialized auditors may signal their expertise by selectively reporting fewer items as KAMs. This leads to the following hypothesis regarding the interaction between auditor industry specialization and audited firm risks on KAM disclosure:

H_{03}: There is no a significant interaction effect between auditor industry specialization and audited firm risks on the disclosure of KAMs.

4- Research Methodology

4-1 Population and Sample

Auditors of Egyptian accounting and auditing firms represent the research population. The sample includes auditors from large accounting and auditing firms (Big 4) as well as auditors from small and medium-sized audit firms. A total of 140 practical cases were distributed among participants. The participants were divided into two sub-samples: the first group received a case involving a low-risk company (70 cases distributed), and the second group received a case involving a high-risk company (70 cases distributed).

A total of 106 completed lists were received from the participants. Some incomplete cases were excluded from the analysis after conducting statistical tests to identify outliers and missing values. As a result, the final sample included 102 valid cases, with a response rate of 73%. Table 1 presents the sample description. The description shows that 32.3% of the respondents are audit managers and partners, whereas the rest are assistant auditors or auditors and senior auditors.

Therefore, participants are certified external auditors; they have the necessary educational background to understand and respond to questions about the experiment cases and control variables, which enhances the validity of the quasi-experimental design results.

Table 1: Sample Description

Description	Frequency	Percentage (%)
Participant's position		
Assistant Auditor and Auditor	46	45.1%
Senior auditor	23	22.5%
Audit manager	18	17.6%
Audit partner	15	14.7%
Total	102	%100
Years of experience		
< 3 years	27	26.5%
4–5 years	21	20.6%
6–10 years	26	25.5%
>10 years	28	27.5%
Total	102	%100
Scientific qualification		
Bachelor of Accounting	54	52.9%
Postgraduate Diploma	13	12.7%
Master's Accounting	19	18.6%
PhD in Accounting	16	15.7%
Total	102	%100
Industry specialization		
< 20% (non-specialist)	52	%51
> 20% (specialist)	50	%49
Total	102	%100

4-2 Quasi Experimental Design

This study employs a quasi-experimental design, comparing two independent samples: a treatment group and a matched control group. A quasi-experimental design is a research method conducted in settings where not all relevant variables can be controlled or manipulated, making it the most common type of experiment in social research. Two sets of questionnaires (see "Appendix B")

were developed to examine the impact of auditor industry specialization and audited firm risks on the disclosure of Key Audit Matters (KAMs) in audit reports. These questionnaires were distributed to participants through personal interviews and email.

Each questionnaire differs only in Section IV, which contains the case study. The structure of the questionnaires is as follows: Section I introduces the case study and briefly explains the nature of the task. Section II offers an overview of key terms relevant to the study, helping participants better understand the case study and respond to related questions. Section III gathers demographic information from participants, including their position, years of experience, educational qualifications, and whether the Financial Regulatory Authority restricts them. Section IV includes practical cases and consists of two distinct scenarios. The first set of questionnaires was sent to 51 auditors (the matched control group), who were presented with a case involving company X, which operates in a stable sector with minimal external influences, low competition, and a limited number of firms in the industry. This case assumes that the current auditor has communicated with the previous auditor, who confirmed the cooperation of the company's management and the adoption of conservative accounting practices (Siregar et al., 2015). As a result, the company's good reputation and management integrity are reflected in the auditor's evaluation of the business risks associated with the company. The second set of questionnaires was sent to 51 other auditors (the treatment group), presenting them with a case involving company Y, which operates in an unstable sector, subject to significant external influences, with high competition and numerous firms in the industry. This case assumes that the current auditor has communicated with the previous auditor, who confirmed that the company's management is uncooperative and follows non-conservative accounting practices (Siregar et al., 2015). Consequently, the auditor's evaluation of the firm's risks reflects the company's poor reputation and lack of integrity in management.

4-3 Variables and Measurement

The following table shows the measures of the variables.

Table 2: Research Variables and Measures

Research Variables	Measures
Disclosure of KAMs	Auditors' responses to practical case questions, using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).
Industry Specialization	A dummy variable takes value (1) if the percentage of audited companies by auditors within a specific sector is 20% or more and takes value (0) if otherwise.
Firm Risks	A dummy variable, by giving some auditors a case study for a company with high risk and taking value (1) and others a case study for a company with low risk and taking value (0), and then comparing the responses of the two groups of auditors regarding their decision to disclose KAMs in the audit report (Quick & Henrizi., 2019).

5- Results and Discussion

Data were analyzed using the Statistical Package for the Social Sciences (IBM SPSS v.26). First, the validity and reliability of the research measures were checked. Exploratory factor analysis (EFA) was used to assess the validity of the research measures, and the results shown in Tables A1 and A2 in Appendix (A) indicate that all items loaded on their respective factors, and their standardized factor loadings were equal to or greater than the threshold (.05)[1], indicating construct validity (Tabachnick & Fidell, 2019; Hair et al., 2013). The Cronbach alpha test was also used to examine the reliability of the research measures. The results in Table A3 in Appendix A show a Cronbach alpha for each measure in the first set of the questionnaire (Low Risks) and the second set (High Risks) to be greater than 0.70, indicating an acceptable level of reliability (Field, 2024).

Descriptive statistics were then performed to identify the percentage of participants based on their classification of each audit matter contained in both ques-

[1] The standardized factor loading is ≥ 0.05 because the sample size is more than 100 respondents (Tabachnick & Fidell., 2019).

tionnaires (low and high risks). Finally, the Kruskal–Wallis and Mann–Whitney tests were used to test the research hypotheses. Data is not normally distributed, and we have two independent research samples in the study (Field, 2024). The statistical results of the Kruskal–Wallis Test in Table 3 showed a significant difference between the auditors' decisions to disclose KAMs in the audit report (Chi-Square = 37.661, Asymp. Sig.= .000). The Mann–Whitney test compares the mean ranks between two grouping variables, i.e., Industry specialization (specialist/non-specialist) (H_{01}), Audited firm risks (low and high risks) (H_{02}), and the interaction effects of auditor industry specialization and audited firm risks on the disclosure of KAMs (H_{03}).

Table 3: Kruskal-Wallis Test

Code	N	Mean Rank	Chi-Square	Df	Asymp. Sig.
1	30	62.77	37.661	3	.000
2	21	18.55			
3	20	68.65			
4	31	51.85			
Total	102				

5-1 Auditor industry Specialization and Disclosed KAM

Regarding the effect of industry specialization on disclosing KAM, the Mann–Whitney test was used to compare the two groups—specialist and non-specialist auditors—regarding their decisions to disclose Key Audit Matters (KAMs), as shown in Table 4. The results revealed a significant difference between these groups regarding their classification and decisions to disclose KAMs, with a p-value of 0.003 ($\leq$ 0.05). This conclusion is further supported by the mean ranks: industrial specialist auditors scored higher (mean rank = 60.39) than non-industrial auditors (mean rank = 42.95). These findings indicate that industry specialization significantly impacts auditors' ability to recognize and disclose KAMs in audit reports. Consequently, the alternative hypothesis H_{a1} is accepted, which asserts that "*There is a significant difference in the level of KAM disclosure between specialized and non-specialized auditors.*" Similar results have been

reported in previous studies, including those by Pinto and Morais (2019), Sierra-García et al. (2019), Shao (2020), He (2021), and Hegazy et al. (2022).

Table 4: Mann Whitney tests for the effect of an auditor's industry specialization

Test Statistics		***Ranks***			
industry specialization		**Group**	**N**	**Mean Rank**	**Sum of Ranks**
Mann-Whitney U	855.500	non-specialist auditors	52	42.95	2233.50
Wilcoxon W	2233.500	specialist auditors	50	60.39	3019.50
Z	-2.986	Total	102		
Asymp. Sig. (2-tailed)	.003				

5-2 Firm Risks and Disclosed KAMs

The second hypothesis can be tested by comparing the two groups of auditors who have taken low and high-risk clients regarding their decision to disclose KAMs, as shown in Table 5. The results of the Mann–Whitney test show that there is a significant difference between the two groups of auditors who have taken low and high-risk firms toward their classification and the decision to disclose KAMs, as the p-value =.000 ≤ .05). Also, the mean rank of the high-risk group (75.47) is greater than the mean rank of the low-risk group (27.53). This implies that the disclosure of KAMs in the audit report will increase with the higher the company's risk; this indicates that audited firm risks significantly impact auditors` ability to recognize and disclose KAMs in audit reports. Therefore, the results support the alternative hypothesis H_{a2}. Thus, H_{a2} is accepted, which indicates that "*There is a significant difference in the level of KAM disclosure between firms with high and low risk.*"

These findings align with those of prior studies, including Ye et al. (2011), Ferreira and Morais (2019), Pinto and Morais (2019), Velte and Issa (2019), Kranenburg and de Waard (2021), Mah'd and Mardini (2022), and Chen et al. (2024).

Table 5: Mann Whitney test's results for the effects of firm risks

Test Statistics		***Ranks***			
audited firm risks		**Group**	**N**	**Mean Rank**	**Sum of Ranks**
Mann-Whitney U	78.000	low risks	51	27.53	1404.00
Wilcoxon W	1404.000	high risks	51	75.47	3849.00
Z	-8.190	Total	102		
Asymp. Sig. (2-tailed)	.000				

5-3 The Interaction Effects of Auditor Industry Specialization and Firm Risks on the Disclosure of KAMs

The third hypothesis was tested by splitting the data based on one independent variable (i.e., auditor specialization) into four groups, as depicted in Table 6a and performing pairwise comparisons using the Mann-Whitney test. Also, Bonferroni correction was used to decrease the chance of Type 1 error accompanying multiple comparisons (Barnett et al., 2022), as shown in Tables 6b and c.

The statistical results of Mann–Whitney's pairwise comparisons revealed that auditor specialization and firm risk have a combined effect on KAMs. The results in Tables 6b and c revealed that specialized auditors auditing high-risk firms disclose KAMs more than specialized auditors for low-risk firms (p-value ≤ .00) or nonspecialized auditors for high-risk firms (p-value ≤ .05), as shown in Table 6c. The mean rank of the industrial specialist auditors for a high-risk firm (65.12) was higher than that of the low-risk firms (38.40) and that of the non-specialized auditor of the high-risk firm (58.44) and the low-risk firm (44.56) as indicated in Table 6b.

Accordingly, the alternative hypothesis H_{a3}, which indicates "*a significant interaction effect between auditor industry specialization and audited firm risks on the disclosure of KAMs."* is accepted. These findings suggest that when an industrial specialist auditor audits a high-risk firm, they are more likely to disclose KAMs in the audit report. These results underscore the value of industrial specialization in equipping external auditors with a deeper understanding of the client's activities, thereby enhancing the quality of professional judgment. Indus-

trial specialist auditors possess superior skills in identifying and addressing critical risks during the audit process, reflected in their ability to disclose these risks effectively in the KAM section of the audit report.

Table 6a: Groups of the interaction effect

Group	Description
Group 1	Specialized auditors with low firm risk
Group 2	Specialized auditors with high firm risk
Group 3	Non-specialized auditors with low firm risk
Group 4	Non-specialized auditors with high firm risk

Table 6b: Mann Whitney test's results

Test Statistics		***Ranks***			
Specialized auditor		**Group**	**N**	**Mean Rank**	**Sum of Ranks**
Mann-Whitney U	619.000	Low Risk	50	65.12	3256.00
Wilcoxon W	1997.000	High Risk	52	38.40	1997.00
Z	-4.592	Total	102		
Asymp. Sig. (2-tailed)	.000				
Test Statistics		**Ranks**			
Non-specialized auditor		**Group**	**N**	**Mean Rank**	**Sum of Ranks**
Mann-Whitney U	946.500	Low risks	51	44.56	2272.50
Wilcoxon W	2272.500	High risks	51	58.44	2980.50
Z	-2.386	Total	102		
Asymp. Sig. (2-tailed)	.017				

Table 6c: Pairwise comparisons

Groups	U statistic	Significance	Adjusted Significance
1 vs. 2	92.0	0.000**	0.0012
1 vs. 3	112.0	0.013*	0.0012
1 vs. 4	95.0	0.040*	0.0012
2 vs. 3	127.0	0.001**	0.0012
2 vs. 4	188.0	0.004**	0.0012
3 vs. 4	192.0	0.004**	0.0012

*Significance at .05 level, **significance at .01 level

6- Conclusion

This study examined the influence of auditor industry specialization and client business risk on the disclosure of KAM and explored the interaction effects between these two variables. To our knowledge, this is the first study to investigate the interplay between auditor industry specialization and client business risk as factors influencing differences in the number of disclosed KAMs.

The findings have several contributions. The study results indicate that industry specialist auditors are associated with more KAMs disclosed in their audit reports, which is in line with the general expectation that due to their better understanding of the client, a higher number of KAMs are probably going to be included in the audit report (Sierra-García et al., 2019), even though that would go inconsistent with the findings of (Mwintome & Alon., 2022), a smaller number of KAMs are likely to be included in the audit report. Based on signaling theory, industry-specialized auditors may believe that reporting more KAMs signals their level of expertise. Since the auditor industry specialization focuses on specific industries, he can gain valuable knowledge and experience specific to his clients. As a result, with a high level of familiarity and expertise in particular industries, auditors with specialized knowledge may view more client transactions as KAMs. This perspective could help to explain the study's finding that the number of KAMs disclosed was positively correlated with auditor industry specialization.

Furthermore, the outcome implied auditors are more likely to disclose KAMs when the client is riskier. As described by the agency theory, auditors of relatively risky clients performed their role by reducing the information asymmetry between the user of the auditor's report and the client by being more transparent about the KAMs of the audit. Lastly, there is an interaction effect of auditor industry specialization and the client business risk on the disclosure of KAMs in the audit report. The significance of the industrial specialization of the external auditor in developing his professional and technical skills is to exercise appropriate professional skepticism and understand how to analyze the risk of the

client's company, thus issuing high-quality professional judgments regarding the identification and disclosure of KAMs in the audit report.

The findings have several implications. Theoretically, this study extends the literature on external audit quality by showing that KAM disclosure enhances the content and transparency of audit reports, reducing information asymmetry and supporting better investment decisions. On the practical level, investors, as primary users of audit reports, may benefit from this research by understanding how auditor specialization and client risk influence the number of disclosed KAMs. This knowledge can help them evaluate the quality and relevance of KAM disclosures, leading to more informed investment decisions. For regulators and standard setters, the research highlights the need to align Egyptian auditing standards with the International Auditing and Assurance Standards Board (IAASB) recommendations. Drawing from the experiences of other developing countries and Arab nations such as Saudi Arabia and the UAE, Egypt could consider adjustments to audit report standards to improve transparency. Hosting conferences and workshops through professional organizations, such as the Egyptian Society of Accountants and Auditors, could facilitate these updates. Additionally, regulatory bodies could play a supervisory role to ensure auditor compliance with updated standards, thereby enhancing the transparency and reliability of audit reports.

7- limitations and Future Researches

The following limitations should be considered when interpreting the results. First, the case materials used in the experiment identified exogenous factors limited to two levels, and the external auditors were provided with specific information to form their judgments. In practice, external auditors operate within a far more complex environment, dealing with a broader array of information and variables. Second, the study examined only the effect of auditor industry specialization and audited firm risks. Other potential factors influencing KAM disclosure, such as auditor independence, audit risks, or additional paragraphs introduced by the IAASB, including the accuracy of the auditor's opinion on ongoing concern and the Opinion Basis Paragraph, were beyond the scope of this study.

Finally, the research was conducted in an emerging market; differences in market maturity, regulatory frameworks, and cultural factors may influence the applicability of the findings to developed markets or other emerging economies.

Future studies should consider applying this study in other developing countries to evaluate the consistency and generalizability of the findings. Additionally, further research is needed to explore the influence of auditor culture, business environments, regulatory differences, and other aspects of the accounting and auditing profession on audit quality and KAM disclosures in developed and developing countries.

Another promising avenue for future research involves examining the interaction between external and internal auditors and its impact on reliance decisions related to KAM disclosures in audit reports. Moreover, to deepen the understanding of key risk identification in KAMs—particularly areas where auditors make significant adjustments to audit procedures annually—further studies involving standard setters, regulators, and academics are needed. These efforts could provide valuable insights into the dynamic aspects of KAM disclosure and contribute to ongoing improvements in audit quality and reporting practices.

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Appendix (A)

Table (A_1): Validity Test for case 1

	Firm risks	***Q***	***industry specialization***	***Q***	***the interaction effects***	***Q***
	.728	Q1	.860	Q9	.939	Q17
	.635	Q2	.805	Q10	.916	Q18
	.774	Q3	.847	Q11	.924	Q19
	.637	Q4	.800	Q12	.928	Q20
	.809	Q5	.670	Q13		
	.541	Q6	.799	Q14		
	.530	Q7	.822	Q15		
	.679	Q8	.861	Q16		
KMO and Bartlett's test	.771		.860		.863	
	Chi-Square =112.828 p-value = .000		Chi-Square =280.106 p-value = .000		Chi-Square =179.303 p-value = .000	

Table (A_2): Validity Test for case 2

	Firm risks	***Q***	***industry specialization***	***Q***	***the interaction effects***	***Q***
	.530	Q1	.904	Q10	.934	Q18
	.572	Q2	.888	Q11	.925	Q19
	.573	Q3	.933	Q12	.942	Q20
	.714	Q4	.913	Q13	.946	Q21
	.508	Q5	.823	Q14		
	.681	Q6	.934	Q15		
	.721	Q7	.833	Q16		
	.736	Q8	.891	Q17		
	.540	Q9				
KMO and Bartlett's test	.642		.907		.859	
	Chi-Square =150.976 p-value = .000		Chi-Square =455.043 p-value = .000		Chi-Square =199.986 p-value = .000	

Table (A_3): Reliability Test

Variables	*Cronbach's Alpha*	
	Case 1	**Case 2**
industry specialization	.924	.962
firm risks	.801	.784
the interaction effects	.944	.952

Table (A_4): Descriptive Statistics for case 1

Variables		*Mean*	*Std. Deviation*	*coefficient of variation*
firm risks	Q1	2.18	1.044	0.479
	Q2	2.28	.970	0.425
	Q3	2.94	1.168	0.397
	Q4	2.76	1.021	0.370
	Q5	2.78	1.093	0.393
	Q6	2.32	1.039	0.448
	Q7	1.94	.767	0.395
	Q8	2.38	1.048	0.440
Statistic		2.45	.662	0.270
industry specialization	Q9	4.02	1.059	0.263
	Q10	3.72	1.070	0.288
	Q11	3.76	1.061	0.282
	Q12	3.98	1.020	0.256
	Q13	3.48	1.015	0.292
	Q14	3.72	1.031	0.277
	Q15	3.80	1.030	0.271
	Q16	3.96	1.029	0.260
Statistic		3.81	.841	0.221
the interaction effects	Q17	3.32	1.203	0.362
	Q18	3.12	1.239	0.397
	Q19	3.18	1.320	0.415
	Q20	3.18	1.410	0.443
Statistic		3.2000	1.19843	0.375

Table (A_5): Descriptive Statistics for case 2

Variables		*Mean*	*Std. Deviation*	*coefficient of variation*
firm risks	Q1	4.26	.723	0.170
	Q2	4.16	1.017	0.244
	Q3	3.94	1.077	0.273
	Q4	3.92	1.066	0.272
	Q5	4.00	.904	0.226
	Q6	3.94	.890	0.226
	Q7	3.98	.958	0.241
	Q8	3.96	.880	0.222
	Q9	4.36	.749	0.172
Statistic		4.06	.560	0.138
Industry specialization	Q10	3.96	1.195	0.302
	Q11	3.76	1.238	0.329
	Q12	3.82	1.240	0.325
	Q13	3.74	1.192	0.319
	Q14	3.58	1.180	0.330
	Q15	3.70	1.344	0.363
	Q16	3.66	1.189	0.325
	Q17	3.68	1.301	0.354
Statistic		3.74	1.10	0.294
the interaction effects	Q18	3.80	1.195	0.314
	Q19	3.60	1.107	0.308
	Q20	3.72	1.310	0.352
	Q21	3.74	1.242	0.332
Statistic		3.72	1.137	0.306

Appendix (B)

Questionnaires

I. personal data

- Current Position of Audit Company

Assistant Auditor and Auditor	Audit manager
Senior auditor	Audit partner

- Years of experience in current position

< 3 years	6–10 years
4–5 years	>10 years

- Your scientific qualification

Bachelor of Accounting	Master's Accounting
Postgraduate Diploma	PhD in Accounting

-Acquired professional certifications (more than one response may be chosen).

didn't have	CPA	CIA	CMA
CFA	IFRS	other option: ……..	

- Registering at the financial regulatory authority's registry

Registered	unregistered

- Industry wherein continuous audit services are offered

- Basic Resources (Iron & Steel)
- Health Care & Pharmaceuticals (Medical services and pharmaceutical industries)
- Food & Beverages (Bakery, Oil, Soap and Agricultural Crops)
- Real Estate
- Financial sector (banks and insurance companies)
- Travel & Leisure
- Shipping & Transportation Services
- education services
- Industrial Goods, Services and Automobiles
- Textile & Durables
- other option: ……

- According to your previous response, the percentage of audited companies in this industry is approximately … % of all audited companies.

Less than 20%	More than 20%

II. Case studies and related audit matters listed in the questionnaire

Case 1: Please read the case below and answer all the questions.

Assuming that you have been tasked with auditing the financial statements of Company Y—an Egyptian joint stock company—for the year that ended in December 2020, if you know that:

The company operates in an unstable and relatively influenced sector of external events, with a high level of competition and many companies operating in this sector. The company has concluded long-term contracts with specified profitability ratios for exporting its goods abroad. These contracts are systematically registered and monitored, and there are no significant modifications to the regulations controlling exports abroad.

You communicated with the company's previous auditor, who confirmed that the company's management was cooperative and reacted positively to proposals for resolving complex accounting issues. At the end of the year, you found no restrictions on the inventory process, nor were there any significant detected misstatements in the financial statements. In addition, market growth is anticipated in the upcoming periods. The company gains new clients and raises the sales growth rate by 20% compared to prior years, increasing the company's market share.

Management's assumptions regarding the impairment of the property and equipment are accurate, reasonable and enforceable in the current economic situation, the company's expected future performance, and in accordance with international standards. The company is also interested in the training and development of employees, particularly in open markets and quick technological developments that lower operational risks resulting from errors of inexperienced employees.

Given the case mentioned above, kindly indicate your agreement to the following statements:

The statements	strongly disagree	Disagree	neutrally	agree	strongly agree
1. The systematic registration and monitoring of long-term contracts is one sign of low risk, which leads to a higher disclosure of KAMs in the audit report.					
2. Compliance by the company's management with internal policies and legal requirements is one sign of low risk, which leads to more disclosure of KAMs in the audit report.					
3. The absence of inventory limitations indicates a lower risk that should be disclosed as KAMs in the audit report.					
4. Increasing the company's market share is one indicator of low risk, so it needs to be disclosed as one of the KAMs.					
5. The compatibility of management's assumptions regarding the impairment of the property and equipment with international standards requi-rements is an indicator of low risk. Therefore, it is preferred that they be disclosed as KAMs in the audit report.					
6. Reduced operational risk as a result of training and development of employees is one of the positive indicators for you, thus increasing the disclosure of KAMs in the audit report.					

The statements	strongly disagree	Disagree	neutrally	agree	strongly agree
7. Depending on the ratio of your risk assessment related to the company (y), you will decide whether or not to disclose KAMs.					
8. The lower the risk associated with the audited company, the greater the disclosure of KAMs in the audit report.					
9. Specialized knowledge of the nature of the client's activity helps to identify areas of significant misstatement of the company.					
10. Having professional expertise in auditing an industry can help you increase or decrease the audit procedures surrounding a specific account because of repeated errors in the same account in this industry.					
11. Comprehending the client's environment enhances the capacity to distinguish between various critical error types that applied internal control procedures might miss.					
12. Your external audit of a company requires: A- Specialized skills and knowledge to apply audit procedures.					
b. Request a consultation from a specialist inside or outside the audit firms.					
13. Industrial Specialization affects the quality of the auditor's professional judgment; thus, the disclosure of KAMs is in-					

The statements	strongly disagree	Disagree	neutrally	agree	strongly agree
creased in the audit report.					
14. The knowledge you receive through specializing in auditing a particular sector affects your professional skepticism and thus increases your ability to disclose KAMs.					
15. Your knowledge of the activity of the audited company affects your ability to identify KAMs and disclose them in the audit report.					
16. Industrial specialization helps you identify appropriate and sufficient evidence that can be relied upon, thus positively affecting the disclosure of KAMs in the audit report.					
17. The auditor's professional ability contributes to improving his ability to identify the risks associated with his client and disclose those risks as KAMs in the audit report.					
18. The auditor's industrial specialization facilitates the identification of changes in risks related to the client, which are then disclosed as KAMs in the audit report.					
19. Your specialized knowledge of the activity of the audited company contributes to the focus on high-risk accounts, which are then disclosed as KAMs in the audit report.					
20. Your experience and deep knowledge of the audited company's activities help you identify and disclose the company's					

The statements	strongly disagree	Disagree	neutrally	agree	strongly agree
risks as KAMs in the audit report.					
21.In general, the disclosure of KAM increases: A- when increasing the risks of the audited company. b- when the auditors have experience in the audited company's industry.					

***Case 2*: *Please read the case below and answer all the questions*.**

Assuming that you have been tasked with auditing the financial statements of Company X—an Egyptian joint stock company—for the year that ended in December 2020, if you know that:

The company operates in a stable and relatively unaffected sector by external events, with a low level of competition and a limited number of companies. Additionally, it is exposed to interest rate risks and fluctuations in the exchange rate, which can lead to economic fluctuations that impact the company's financial performance.

A significant amount of inventory was found at the end of the year, and you participated in the inventory process via distant observations. In addition, impairment of fixed assets is expected due to the speed of technological development, with no reasonable custom depreciation of this according to International Accounting Standards.

The department added a new production line based on advanced technology to stay competitive and meet the market's increasing demand. As a result, you must recognize and identify the risks associated with this new production line, enter a new competitive market, and undertake any associated risks.

Given the case mentioned above, kindly indicate your agreement to the following statements:

The statements	strongly disagree	disagree	neutrally	agree	strongly agree
1. A significant amount of the company's inventory is one of the risks that needs to be verified and revealed as KAMs in the audit report.					
2. Limitations on year-end inventory inventories are an important issue that should be disclosed as KAMs in the audit report.					
3. Risks of fluctuations in the exchange rate are one of the major adverse events disclosed in the audit report as KAMs.					
4. Interest rate fluctuation is one of the important events that should be disclosed as a KAM in the audit report.					
5. Sufficient depreciation that is unformed for impairment of fixed asset prices requires disclosure as KAMs in the audit report.					
6. The probability that the book value of fixed assets exceeds the estimated recoverable is a risk to be disclosed in the audit report.					
7. The new production line, based on the application of advanced technology, is one of the KAMs to be disclosed in the audit report.					
8. The new production line requires contacting those charged with governance and the audit committee to lower the audit risks to an acceptable level.					

The statements	strongly disagree	disagree	neutrally	agree	strongly agree
9. Depending on the ratio of your risk assessment related to the company (x), you will decide whether or not to disclose KAMs.					
10. Specialized knowledge of the nature of the client's activity helps identify areas of significant misstatement of the company.					
11. Having professional expertise in auditing an industry can help you increase or decrease the audit procedures surrounding a specific account due to repeated errors in the same account in this industry.					
12. Comprehending the client's environment enhances the capacity to distinguish between various critical error types that applied internal control procedures might miss.					
13. Your external audit of a company requires: A- Specialized skills and knowledge to apply audit procedures.					
b- Request a consultation from a specialist inside or outside the audit firms.					
14. Industrial specialization affects the quality of the auditor's professional judgment; thus, the disclosure of KAMs is increased in the audit report.					
15. The knowledge you receive through specializing in auditing a particular sector affects your professional skepticism and thus increases your abil-					

The statements	strongly disagree	disagree	neutrally	agree	strongly agree
ity to disclose KAMs.					
16. Your knowledge of the activity of the audited company affects your ability to identify KAMs and disclose them in the audit report.					
17. Industrial specialization helps you identify appropriate and sufficient evidence that can be relied upon, thus positively affecting the disclosure of KAMs in the audit report.					
18. The auditor's professional ability contributes to improving his ability to identify the risks associated with his client and disclose those risks as KAMs in the audit report.					
19. The industrial specialization of the auditor facilitates the identification of changes in risks related to the client, which are then disclosed as KAMs in the audit report.					
20. Your specialized knowledge of the activity of the audited company contributes to the focus on high-risk accounts, which are then disclosed as KAMs in the audit report.					
21. Your experience and deep knowledge of the activities of the audited company help you identify and disclose the company's risks as KAMs in the audit report.					
22. In general, the disclosure of KAM increases: A- when increasing the risks of the audited company. b- when the auditors have experience in the audited company's industry.					