



Cloud computing to audit quality- evidence from the Kingdom of Saudi Arabia

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Abstract

This study investigates how the use of cloud computing systems, compared to on-site ERP systems, affects audit quality. A survey of 430 auditors in Saudi Arabia was conducted to collect data on the impact of cloud computing and on-site ERP systems on audit quality. The collected data was analyzed using statistical techniques to determine the impact of these systems on audit quality. The study found that cloud computing and on-site ERP systems improved audit accuracy, audit process efficiency, report quality, and audit evidence reliability. The results of this study have significant implications for enhancing audit quality. The study suggests that auditors should consider incorporating cloud computing systems to improve the quality of audits while also boosting the efficiency of the audit process. The findings of this study help auditors make informed decisions about using cloud computing systems to improve their audit quality and meet the growing demand for reliable and accurate financial audits. However, the study's limitations include not considering other stakeholders' views and not evaluating the costs of implementing cloud computing systems. Future research can build upon the findings of this study and address its limitations to provide a more comprehensive understanding of the impact of cloud computing systems on audit quality.

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1. Introduction

The rapid advancement of technology has paved the way for new innovations in various industries, including the accounting and audit sectors (Alotaibi, 2023). In recent years, cloud computing has emerged as a game-changer for businesses, allowing them to operate more efficiently and effectively. Cloud computing systems enable organizations to store and access data over the internet instead of relying on local servers or computers, representing a distinct type of technology. The popularity of cloud computing technology has increased among businesses due to its cost-effectiveness, scalability, and flexibility. With the rise of cloud computing systems, the question arises: How does the use of cloud computing systems impact audit quality? The objective of this research paper is to investigate how the use of cloud computing systems, in comparison to on-premises ERP systems, impacts audit quality within Saudi Arabia.

The study is important because audit quality plays a crucial role in ensuring the reliability of financial statements and protecting stakeholders' interests. The rapid advancements in technology have revolutionized the business landscape, particularly with the advent of cloud computing systems. These systems offer numerous advantages to organizations, including cost savings, enhanced flexibility, and improved efficiency. However, as organizations shift towards cloud computing systems, concerns arise about the impact of this transition on financial transactions and their internal controls. In Saudi Arabia, the adoption of cloud computing systems has been on the rise in recent years, with more and more organizations transitioning from on-premises ERP systems to cloud-based solutions. The country's development initiative, which seeks to modernize and diversify the Saudi economy, has been a driving force behind this shift towards digital transformation. However, the impact of this shift on audit quality in Saudi Arabia remains a topic of debate. Audit quality is essential for ensuring the accuracy and reliability of financial statements, which is critical for stakeholders such as investors, creditors, and regulators. As such, it is crucial to understand the potential impact of cloud computing systems on audit quality in Saudi Arabia. Previous studies have shown mixed results regarding the impact of cloud computing systems on audit quality. Some studies have found that cloud

computing systems can enhance audit quality by providing auditors with real-time access to data and improving data security. On the other hand, other studies have found that cloud computing systems can lead to a decrease in audit quality due to the complexity of the technology and the potential for data manipulation.

There is a need to examine the impact of cloud computing systems on audit quality, given the increasing adoption of these systems by organizations in Saudi Arabia. This is particularly important given the unique characteristics of the Saudi Arabian business environment, including the prevalence of family-owned businesses and reliance on government contracts. Furthermore, the regulatory framework for auditing in Saudi Arabia is still in its early stages of development, and the transition to cloud computing systems may present new challenges for auditors in complying with regulatory requirements. As such, it is essential to assess the impact of cloud computing systems on audit quality in the Saudi Arabian context. Overall, the background and context of the effect of using cloud computing systems on audit quality highlight the need for further research. This study aims to contribute to the literature by examining the impact of cloud computing systems on audit quality in the Saudi Arabian context.

1.1. Contributions

The effect of using cloud-computing systems on audit quality is a significant research topic for several reasons. Firstly, the adoption of cloud computing systems in Saudi Arabia is growing rapidly. According to a report by the Saudi Communications and Information Technology Commission, the cloud computing market in Saudi Arabia is expected to reach \$1.5 billion by 2022 (Alsolami, 2022). With the increasing adoption of cloud computing systems in the country, it is important to understand their impact on audit quality.

Secondly, audit quality is crucial for ensuring the accuracy and reliability of financial statements. In Saudi Arabia, audits are mandated by the Saudi Capital Market Authority (CMA) for listed firms and the Saudi Organization for Certified Public Accountants (SOCPA) for non-listed firms (Nurunnabi, Jermakowicz, & Donker, 2020). Audits play a critical role in bolstering the trustworthiness of financial statements and fostering transparency. Thus, comprehending the influence of utilizing cloud computing systems on audit quality in Saudi Arabia is important.

Thirdly, the Saudi Arabian business environment is unique, and factors such as cultural norms, regulatory frameworks, and business practices may influence audit quality. For instance, the business culture in Saudi Arabia places a high emphasis on personal relationships and trust, which may affect the independence and objectivity of auditors. Therefore, understanding the impact of cloud computing systems on audit quality in Saudi Arabia requires an analysis of these factors.

Fourthly, the view of auditors on the impact of cloud computing systems on audit quality in Saudi Arabia has not been adequately researched. While investigations on the relationship between cloud computing systems and audit quality exist, it is important to capture the auditors' view on the impact of cloud computing systems on audit quality.

Finally, the findings of this study have practical implications for auditors and organizations. As more organizations adopt cloud computing systems, it is important to understand their impact on audit quality and to identify best practices for using these systems in an audit context. The findings of this study provide insights and recommendations for auditors and organizations in Saudi Arabia that are considering or have already transitioned to cloud computing systems.

1.2. Research Question and Objectives

The effect of using cloud computing systems on audit quality in Saudi Arabia is a significant research topic due to the increasing adoption of cloud computing systems, the importance of audit quality in promoting transparency and credibility in financial reporting, the unique business environment in Saudi Arabia, the lack of research on this topic specifically in Saudi Arabia, and the practical implications of the findings for auditors and organizations in the country. Therefore, the research question of this study is:

What is the opinion of the auditors in Saudi Arabia on the effect of the ERP cloud-computing systems against the on-premises ERP systems on audit quality?

The primary objective of examining the effect of using cloud-computing systems compared to on-premises ERP systems on audit quality in Saudi Arabia is to determine which system is more effective in improving audit quality based on the auditors' view. The goal of this paper is to appraise the impact of each system on audit quality by evaluating its effect on the precision, efficacy, dependability, and caliber of audit evidence and reports.

The accuracy of financial statements is a crucial factor in determining the audit quality. The use of cloud-computing systems and on-premises ERP systems affects the accuracy of financial statements differently. The efficiency of the audit process is another significant factor in determining the audit quality. The use of cloud-computing systems and on-premises ERP systems can affect the efficiency of the audit process differently. The research aims to determine which system is more efficient in the audit process. The reliability of audit evidence is a critical factor in determining audit quality. The use of cloud-computing systems and on-premises ERP systems can affect the reliability of audit evidence differently. The study aims to determine which system is more reliable in providing audit evidence. Finally, the quality of audit reports is an essential factor in

determining the audit quality. The use of cloud-computing systems and on-premises ERP systems can affect the quality of audit reports differently. The research aims to determine which system produces higher quality audit reports.

The research objectives mentioned above are important as they provide a comprehensive evaluation of the effect of using cloud-computing systems compared to on-premises ERP systems on audit quality. By examining the impact of each system on various aspects that impact audit quality, this paper provides a clear understanding of the strengths and weaknesses of each system. Furthermore, the research objectives help in identifying areas where the use of each system can be improved to enhance audit quality. For instance, if the study finds that cloud-computing systems are more efficient in the audit process than on-premises ERP systems, organizations can be encouraged to adopt cloud-computing systems to improve the efficiency of the audit process. Overall, the primary objective of examining the effect of using cloud-computing systems compared to on-premises ERP systems on audit quality in Saudi Arabia is to determine which system is more effective in improving audit quality.

The research aims to evaluate the impact of each system on different factors that affect audit quality, including accuracy, efficiency, reliability, and the quality of audit evidence and reports. The research objectives are critical as they provide a comprehensive evaluation of the strengths and weaknesses of each system and help in identifying areas where each system can be improved to enhance audit quality.

Overall, the research question and objectives of this investigation are intended to yield a comprehensive understating of the impact of employing cloud computing systems on audit quality in Saudi Arabia. By addressing the research question and objectives, this inquiry seeks to enrich the literature on the relationship between cloud computing and audit quality and to offer pragmatic recommendations for auditors and organizations.

2. Review of Literature

2.1. Overview of Cloud Computing Systems and on-Premises ERP Systems

The use of cloud computing systems and on-premises ERP systems has become increasingly popular in recent years, with many organizations adopting one or both of these approaches to manage their IT infrastructure and applications (Byrnes et al., 2018). In this literature review, this paper examines the existing research on cloud computing systems and on-premises ERP systems, focusing on their advantages, disadvantages, and the factors that influence the choice between these two systems.

Cloud computing systems have become popular due to their flexibility, scalability, and cost-effectiveness (Kraus et al., 2022; Kraus et al., 2021; Morakanyane, Grace, & O'reilly, 2017; Nadkarni & Prüggl, 2021; Reis, Amorim, Melão, & Matos, 2018). According to Kraus et al. (2022), cloud computing systems have become an essential part of modern businesses, providing easy access to data and applications, reducing infrastructure costs, and enabling remote work. Cloud computing systems present numerous benefits over on-premises ERP systems, including reduced initial expenses, expedited deployment times, and simplified scalability. A study by Gupta, Meissonier, Drave, and Roubaud (2020) examined the impact of cloud computing on organizational performance and found that cloud computing adoption leads to improved organizational performance and increased agility. Additionally, Kiran and Reddy (2019) found that companies that use cloud computing systems have a higher level of innovation and are more likely to introduce new products and services. However, cloud computing systems also have some disadvantages. According to Yang, Xiong, and Ren (2020), data security and privacy concerns are some of the main challenges facing cloud computing systems. Additionally, some organizations may face regulatory barriers to the adoption of cloud computing, particularly in industries such as healthcare and finance.

On the other hand, on-premises ERP systems are installed and managed locally within an organization's premises. According to Saa, Moscoso-Zea, Costales, and Luján-Mora (2017), on-premises ERP systems provide a high level of control and customization, as well as better data security and privacy since the data is stored on the organization's own servers. On-premises ERP systems also offer a higher degree of customization and integration with existing IT infrastructure. However, on-premises ERP systems have some disadvantages. According to Kiran and Reddy (2019), on-premises ERP systems require a significant upfront investment in hardware and software, as well as ongoing maintenance and upgrades. Additionally, on-premises ERP systems may not be as flexible as cloud computing systems, particularly in terms of scalability and remote access.

Overall, the literature suggests that both cloud computing systems and on-premises ERP systems have advantages and disadvantages, and the choice between these systems depends on various factors such as business requirements, IT strategy, and budget. Cloud computing systems offer flexibility, scalability, and cost-effectiveness, while on-premises ERP systems provide a high level of control, customization, and data security. Therefore, organizations need to carefully evaluate their requirements and consider the advantages and disadvantages of each system before making a decision.

2.2. Factors Affecting Audit Quality

This section of the literature review examines the factors affecting audit and their impact on audit outcomes. Auditor expertise is a key factor affecting audit quality. Maintaining public trust and confidence in

financial reporting relies on ensuring high-quality audits (Antle & Nalebuff, 1991; Barr-Pulliam, Brown-Liburd, & Sanderson, 2022; Ewert & Wagenhofer, 2019). Audit quality is influenced by various factors, including auditor expertise, audit firm size, audit fees, auditor independence, and regulatory oversight (DeFond & Zhang, 2014).

Experienced auditors are better equipped to identify and assess risks and design effective audit procedures to address those risks (DeFond & Zhang, 2014). Auditors with greater expertise have been found to produce higher quality audit reports, resulting in fewer restatements and reduced litigation risk. Audit firm size is another factor that affects audit quality (Alareeni, 2019). Larger audit firms have more resources to allocate to training, research, and development of audit methodologies. They also have access to experienced auditors, which can improve the quality of audits. However, larger audit firms may face challenges regarding independence due to potential conflicts of interest.

Audit fees can also impact audit quality (Ghafran & O'Sullivan, 2017). Higher fees can provide auditors with more time and resources to dedicate to the audit, potentially improving the quality of the audit. However, excessive fees may result in pressure on auditors to compromise on audit quality to meet client demands. Auditor independence is a critical factor in ensuring audit quality (Tepalagul & Lin, 2015). Independence is necessary to maintain objectivity and impartiality in the audit process. The presence of non-audit services, such as consulting or tax services, can introduce conflicts of interest that may compromise auditor independence.

Regulatory oversight plays a crucial role in ensuring auditor independence by setting and enforcing independence standards. The regulatory environment is another factor that impacts audit quality (Francis, 2011). Strong regulatory oversight can enhance audit quality by establishing clear guidelines and standards for auditors to follow. Additionally, regulatory oversight provides a mechanism for monitoring and enforcing compliance with these standards. However, excessive regulatory oversight can create a compliance-oriented culture that prioritizes meeting regulatory requirements over improving the quality of the audit.

Client characteristics can also influence audit quality (Bills, Jeter, & Stein, 2015). Clients with complex operations, significant financial reporting risks, or a history of accounting irregularities are more likely to require more extensive and rigorous audit procedures. Clients with a history of accounting irregularities may also be more likely to engage in fraudulent activities, which increases the risk of audit failure.

Generally, factors that affect audit quality include auditor expertise, audit firm size, audit fees, auditor independence, regulatory oversight, and client characteristics. Although each factor may have a distinct impact on audit quality, it is essential to consider them collectively to ensure high-quality audit outcomes. Collaboration among regulators, audit firms, and clients is essential to promote a culture of audit quality and enhance public trust in financial reporting.

2.3. Previous Studies on the Impact of Cloud Computing Systems on Audit Quality

Several previous studies have examined the impact of cloud computing systems on audit quality. The following literature review summarizes some of the significant findings of these studies. One study conducted by Sakkos and Vasilikari (2017) investigated the effect of cloud computing on audit quality, with a focus on the internal audit function. The study collected survey data from 13 internal audit managers from Greek banks that had adopted cloud computing. The results showed that the use of cloud computing in the internal audit function positively affects audit quality. The authors attributed this finding to the increased efficiency and effectiveness of the audit process that resulted from the use of cloud computing.

Another study by Purnamasari, Amran, and Hartanto (2022) focused on examining the impact of cloud computing on audit quality in Indonesia. The study distributed 400 questionnaires to auditors from various public accounting firms in Indonesia. The findings indicated that the use of cloud computing has a positive impact on audit quality, specifically in terms of audit evidence, audit planning, and audit report quality. The authors argued that cloud computing can enhance the audit process by improving access to relevant data, enhancing communication and collaboration among audit team members, and reducing the time and cost required to conduct audits. Additionally, Rahman and Zirur (2022) conducted research exploring the influence of IT technology tools, including cloud computing, on audit quality. The study focused on a sample of Chinese firms listed from 2011 to 2019. The outcomes revealed that the adoption of cloud computing has a favorable effect on audit quality, particularly in relation to audit evidence, audit planning, and audit report quality. The authors ascribed this discovery to the amplified efficiency and efficacy of the audit process resulting from the use of IT technology tools.

Nonetheless, not all studies have yielded a positive influence of cloud computing on audit quality. For instance, a research conducted by Rosati, Gogolin, and Lynn (2022) analyzed the impact of cyber-security incidents on audit quality in the USA resulting from the use of cloud computing. The study analysed a sample of data breaches for a large set of US firms. The findings indicated that the adoption of cloud computing does not have a significant impact on audit quality. The authors proposed that the lack of impact could be attributed to the fact that cloud computing is still a relatively novel technology, and that auditors may not have enough experience and training to make optimal use of the technology.

Overall, the literature suggests that the use of cloud computing can have a positive impact on audit quality, specifically in terms of improving access to relevant data, enhancing communication and collaboration among audit team members, and reducing the time and cost required to conduct audits. However, the

effectiveness of cloud computing in improving audit quality may depend on factors such as the experience and training of auditors, the extent of adoption of cloud computing within a particular country or industry, and the specific features and capabilities of the employed cloud computing system.

2.4. Theoretical Research Framework (TRF) and Cloud Computing Systems

The Technology Acceptance Model (TAM) is a widely accepted theory that explains the factors that influence users' acceptance and usage of technology (Davis, 1989). It is particularly suitable for this context because it focuses on individual perceptions and attitudes towards technology, which is crucial in determining whether users would prefer on-premises ERP systems or cloud-computing systems.

The Perceived Contribution (PC) is a crucial component of the TAM and refers to the extent to which users perceive that technology, such as cloud computing systems, contributes to their work (Davis, 1989). PC is an essential factor in determining the user's intention to adopt a technology, as it influences their perception of the benefits, they can gain from using the technology.

In the context of cloud computing systems, PC refers to the perceived benefits that users can gain from using these systems. These benefits may include increased efficiency, accessibility, and cost-effectiveness. Cloud computing systems have revolutionized the way organizations conduct their business, providing access to a range of services that would otherwise be impossible to manage in-house.

The acceptance of cloud computing systems is heavily influenced by users' perceptions of the benefits that the technology can bring to their work. These perceptions may vary depending on the user's role, experience, and expectations. Organizations must assess and address their employees' perceptions of cloud computing systems to ensure that they are accepted and utilized to their full potential. Overall, PC plays a vital role in determining the acceptance of cloud computing systems, and organizations must take this into account when implementing these technologies.

A well-designed survey instrument based on the TAM model was used to collect data from users of both on-premises ERP systems and cloud-computing systems in Saudi Arabia. The survey measured users' perceptions of PC, attitudes towards technology, subjective norms, and behavioral intention. The collected data could then be analyzed to determine whether auditors in Saudi Arabia perceive on-premises ERP systems as superior to cloud-computing systems in terms of audit quality.

3. Hypothesis Development

The adoption of cloud computing systems is expected to reach \$1.5 billion in Saudi Arabia by 2022 (Alsolami, 2022), making it crucial to understand the auditors' view on the impact of these systems on audit quality in the country. This study hypothesizes that the use of cloud computing systems positively impacts audit quality in Saudi Arabia compared to on-premises ERP systems. Cloud computing systems offer greater flexibility, accessibility, and scalability, enabling auditors to access data from anywhere, anytime, with fewer hardware and maintenance costs. The ease of use and data accessibility offered by cloud computing systems may lead to increased efficiency, improved audit quality, and more excellent reliability of audit evidence, ultimately leading to more accurate and reliable financial audits. Investigating this hypothesis can provide valuable insights into the potential of cloud computing systems to improve audit quality in Saudi Arabia and help auditors make informed decisions about their use.

Therefore, the following hypothesis is proposed:

H1. The use of on-premises ERP systems improves audit quality in Saudi Arabia compared to the use of cloud-computing systems.

This hypothesis assumes auditors believe that on-premises ERP systems offer greater control and security than cloud-computing systems. With on-premises ERP systems, auditors can have greater control over the system and its data, reducing the risk of data breaches and other security issues. Additionally, on-premises ERP systems can offer greater customization and integration with existing systems, improving audit processes' efficiency and accuracy. Thus, using on-premises ERP systems may improve audit quality in Saudi Arabia. Investigating this hypothesis can provide valuable insights into the factors that influence the adoption of cloud computing in the audit industry, the impact of ERP systems on audit quality, and the progress toward greater transparency and accountability in the business sector. The results of this research can have practical implications for auditors and organizations in Saudi Arabia, making it a worthwhile area of investigation.

4. Methodology

4.1. Research Design and Approach

The research design and approach for this study on the effect of using cloud computing systems on audit quality in Saudi Arabia is based on quantitative research methodology. This approach involves the use of statistical analysis techniques to measure the impact of cloud computing systems on audit quality, compared to on-premises ERP systems. The research design is a cross-sectional survey, collecting data from auditors who have experience working with cloud computing systems, on-premises ERP systems, or both. The data was collected using a structured questionnaire that was distributed to a sample of publicly listed firms in Saudi Arabia. The questionnaire was designed to gather information on the use of cloud computing systems and on-

premises ERP systems, the perceived advantages and disadvantages of each system, and their impact on audit quality.

Several steps were taken to guarantee the validity and reliability of the survey questionnaire. First, the questionnaire was pre-tested on a small group of respondents to detect any issues with the questions or the format of the questionnaire. The feedback from the pre-test was used to refine the questionnaire and ensure that it was clear and understandable. Second, the survey questionnaire was designed using established best practices in survey research, such as using clear and concise language, avoiding leading questions, and providing response options that cover the full range of possible answers. The questionnaire also included instructions for respondents on how to complete the questionnaire, including any relevant definitions or clarifications. Third, the collected survey questionnaire data underwent analysis using suitable statistical techniques to uncover any correlations or patterns within the data. The analysis involved utilizing software tools such as Excel and SPSS, and employed both descriptive statistics, including frequencies and percentages, and inferential statistics, such as correlations and regression analysis.

The survey questionnaire approach has several advantages in this research context. First, it allows for the collection of data from a large and diverse sample population, providing a comprehensive view of the perceptions and experiences of various stakeholders regarding the use of cloud computing systems in auditing. Second, the use of standardized questions ensures that the data collected is consistent and comparable across respondents. Finally, the statistical analysis techniques facilitate the discovery of patterns and relationships in data that qualitative data may not reveal readily. However, there are also some limitations to using a survey questionnaire approach. First, the data collected is limited to the information provided by the respondents and may not capture all relevant factors or perspectives. Second, there is a risk of response bias, where respondents may provide inaccurate or incomplete information. Finally, the analysis is limited by the quality of the data collected and may be affected by issues such as missing data or outliers.

To ensure the generalizability of the findings to the population of auditors in Saudi Arabia, the sample selection for this study was based on a random sampling technique. The appropriate sample size was determined through analysis to ensure that it is sufficient to detect any significant differences between the two groups being compared. The collected data were analyzed using statistical software, specifically SPSS. Descriptive statistics were utilized to summarize the data, while the independent samples t-test was used to test the formulated hypothesis. The questionnaire was pretested on a small sample of auditors before being distributed to the larger sample to ensure the validity and reliability of the collected data. Additionally, informed consent was obtained from all participants before completing the questionnaire, and identifying information was kept confidential.

Overall, the survey questionnaire approach is a useful research design and approach for investigating the impact of cloud computing systems on audit quality in Saudi Arabia. The approach provides a comprehensive view of the perceptions and experiences of various stakeholders, while also enabling the identification of patterns and relationships in the data. However, researchers must be aware of the limitations of the approach and take steps to ensure the validity and reliability of the data collected.

4.2. Sample and Data

The survey questionnaire was developed based on the research question and objectives of the study. The survey questions were designed to elicit information on various aspects of cloud computing systems and on-premises ERP systems, including their advantages and disadvantages in audits and factors affecting their audit process. The questionnaire was distributed to a sample population of auditors in Saudi Arabia who audit using cloud computing or on-premises ERP systems in their organizations. In conducting a survey questionnaire, the sampling technique plays a crucial role in ensuring that the results obtained are representative of the population being studied. In this paper, the target population is audit professionals in Saudi Arabia who have experience in using either cloud computing systems or on-premises ERP systems.

The sample population was selected using a random sampling technique to ensure that a diverse range of perspectives is represented. The sampling method employed is stratified random sampling. This type of probability sampling involves dividing the population into subgroups or strata based on specific criteria and randomly selecting a sample from each stratum. The advantage of using stratified sampling is that it allows for a more representative sample to be obtained by ensuring that each stratum is adequately represented in the sample. The strata were based on the type of system used, i.e., cloud computing systems or on-premises ERP systems.

The selected participants received the questionnaire via email and were asked to complete it within a specific timeframe. The survey questionnaire comprised closed-ended questions used to obtain quantitative data. The questionnaire was carefully crafted to gather relevant information on the following topics:

- Demographic information of the respondents, such as age, gender, education level, and work experience.
- The type of system used in their organization, i.e., cloud computing systems or on-premises ERP systems.
- The perceived advantages and disadvantages of using their respective systems in their audit work.

- The impact of their respective systems on audit quality.
- The challenges faced when using their respective systems.

Data collection is a fundamental aspect of any research project. For this study, the data collection method is using the survey questionnaires methodology. Survey questionnaires are a commonly used research design and approach in various fields of study, including accounting and auditing research. This approach involves gathering data from a sample population through a set of standardized questions designed to elicit specific information. In the context of researching the impact of cloud computing systems on audit quality in Saudi Arabia, a survey questionnaire can be a useful tool to collect data on the perceptions of auditors, IT professionals, and business leaders regarding the use of cloud computing systems in auditing.

The survey questionnaire approach is a valuable research design for investigating auditors' views on the impact of cloud computing and on-premises ERP systems on audit quality in Saudi Arabia. The approach provides a comprehensive view of the perceptions and experiences of various stakeholders while also enabling the identification of patterns and relationships in the data. However, the validity and reliability of the questionnaire and data collected were tested to control this approach's limitations.

4.3. Questionnaire Development

The use of cloud-computing systems and on-site ERP systems has become increasingly popular in the business world, including in Saudi Arabia. However, it is important to understand the impact of these systems on audit quality. To explore this topic, a survey was conducted with 430 auditors in Saudi Arabia using 8 PCs based on (Davis, 1989). The questions were designed to assess the auditors' perceptions of the impact of cloud-computing systems and on-site ERP systems on audit quality. There are 8 items as shown in Table 1, and a 5-point Likert scale (ranging from 1 for strongly disagree to 5 for strongly agree) was used to measure these items that assess the impact of ERP cloud-computing systems and on-premises ERP systems on audit quality. These items were adapted from the UK Financial Reporting Council report with some modifications (FRC, 2020).

Table 1. The elements of the PC.

Item#	PCs
PC1	The use of cloud-computing systems improves the accuracy of financial statements.
PC2	The use of in-site ERP systems improves the accuracy of financial statements.
PC3	The use of cloud-computing systems improves the efficiency of the audit process.
PC4	The use of in-site ERP systems improves the efficiency of the audit process.
PC5	The use of cloud-computing systems improves the quality of the audit trails.
PC6	The use of in-site ERP systems improves the quality of the audit trails.
PC7	The use of cloud-computing systems increases the reliability of financial records.
PC8	The use of in-site ERP systems increases the reliability of financial records.

4.4. Dependent Variable

The dependent variable is audit quality using the PC. The PC is utilized to evaluate the impact of either ERP cloud-computing systems or on-premises ERP systems on audit quality, as well as to gather the respondents' perspectives on the contribution of these disruptive technologies. Several studies have examined the relationship between audit quality and the type of system used for auditing. For instance, a study by Imoniana, Silva, Reginato, Slomski, and Slomski (2020) found that using computer-assisted audit techniques, which can be used in both on-premises ERP systems and cloud-computing systems, can enhance audit quality. Another study by Rosati et al. (2022) found that using on-premises ERP systems can improve audit quality by reducing the time required to complete the audit process and enhancing the accuracy of financial statements. Similarly, a study by Mundra and Prakash (2022) found that using on-premises ERP systems can enhance audit quality by giving financial records greater reliability.

Overall, the literature suggests that the type of system used can significantly impact audit quality. Thus, investigating whether auditors in Saudi Arabia believe that using on-premises ERP systems leads to greater audit quality than cloud-computing systems is a worthwhile area of investigation. By examining the factors influencing auditors' preferences for one system over the other, the study can provide valuable insights into adopting cloud computing and the progress toward greater transparency and accountability in the business sector.

4.5. Independent Variable

The two types of systems used for financial reporting are the independent variables in this hypothesis: on-premises ERP systems and cloud-computing systems. For example, a study by Rosati et al. (2022) found that using on-premises ERP systems can improve financial reporting quality by enhancing data accuracy and timeliness. Another study by Liew, O'Leary, Perdana, and Wang (2022) found that on-premises ERP systems can improve audit quality by providing auditors with greater control and access to the firm's financial data.

On the other hand, cloud-computing systems offer several advantages, such as ease of access and scalability, which can improve the efficiency of financial reporting processes. A study by [Øverdal, Haddara, and Langseth \(2022\)](#) found that cloud-computing systems can improve financial reporting quality by providing real-time access to financial data and enabling stakeholder collaboration. Overall, the literature suggests that the type of system used for financial reporting can impact audit quality. Thus, investigating whether auditors in Saudi Arabia believe that firms using on-premises ERP systems have better audit quality than cloud-computing systems can provide valuable insights into the factors influencing auditors' preferences and decision-making in the audit process.

5. Data Analysis

5.1. The Instrument Validation Test

The Cronbach's alpha test assesses the reliability and validity of the survey results, and this test measures a survey's degree of internal consistency, ensuring that the questions measure the same underlying construct. The survey's Cronbach's alpha coefficient for the 8 survey items was calculated to be 0.89 as shown in [Table 2](#), indicating a high level of internal consistency among the questions. This score suggests that the questions are reliable and valid in measuring the respondents' attitudes toward cloud-computing and on-premises ERP systems.

Table 2. Validity and reliability test results.

Cronbach's alpha	Number of items
0.89	8

5.2. Demographic Analysis

[Table 3](#) presents the participant demographics of the study, which compared the perceptions of auditors in Saudi Arabia towards audit quality of on-premises ERP systems and cloud-computing systems. The table provides information on the gender, age, and years of auditing experience of the participants, categorized by their use of cloud-computing systems (n=112) or on-premises ERP systems (n=318).

Table 3. Demographic analysis.

Demographics	Cloud-computing system users (n=112)	On-site ERP system users (n=318)
Gender		
Male	74 (66.07%)	228 (71.70%)
Female	38 (33.93%)	90 (28.30%)
Age		
18-30 Years	29 (25.89%)	60 (18.87%)
31-40 Years	49 (43.75%)	140 (44.03%)
41-50 Years	22 (19.64%)	66 (20.75%)
51-60 Years	8 (7.14%)	38 (11.95%)
Above 60 years	4 (3.57%)	14 (4.40%)
Years of experience		
0-5 Years	27 (24.11%)	54 (16.98%)
6-10 Years	35 (31.25%)	86 (27.04%)
11-15 Years	25 (22.32%)	78 (24.53%)
16-20 Years	13 (11.61%)	38 (11.95%)
Above 20 years	12 (10.71%)	62 (19.49%)

Regarding gender, most participants were male in both groups, with 66.07% of cloud-computing system users and 71.70% of on-site ERP system users being male. However, there were more female participants in the cloud-computing system user group (33.93%) than in the on-site ERP system user group (28.30%). The participants' age distribution showed that most participants in both groups were in the age range of 31-40 years. However, there were slightly more participants in the cloud-computing system user group (43.75%) than in the on-site ERP system user group (44.03%). The table also shows that the proportion of participants in the two groups decreased with increasing age.

The years of auditing experience of the participants were also categorized into five groups. The most significant proportion of participants in both groups had 6-10 years of auditing experience, with 31.25% of cloud-computing system users and 27.04% of on-site ERP system users falling into this category. The proportion of participants in each category generally increased with the years of auditing experience, except for the 16-20 years of experience category, which had a slightly lower proportion of participants in both groups compared to the 11-15 years of experience category.

Overall, [Table 3](#) provides an overview of the participant demographics of the study, which is important to consider when interpreting the results. The demographics may affect the participants' perceptions of the audit quality of the two systems and should be considered when analyzing the data.

6. Results and Discussion

6.1. Results

6.1.1. Descriptive Statistics

[Table 4](#) shows the descriptive statistics for audit quality in two different types of ERP systems: on-site and cloud-computing. The sample sizes for each group are $n=318$ and $n=112$, respectively. The mean audit quality score for the on-site ERP system is 3.62, while the mean audit quality score for the cloud-computing system is 3.79. This indicates that, on average, audit quality is higher for the cloud computing system. However, it is important to note that the difference in means is relatively small and may not be statistically significant. The standard deviation measures the amount of variability in the data. The standard deviation for audit quality in the on-site ERP system is 0.92, while the standard deviation for the cloud-computing system is slightly higher at 0.95. This suggests that there is slightly more variability in the audit quality scores for the cloud-computing system.

Descriptive statistics provide a summary of the data and can help identify trends, patterns, and outliers. In this case, the descriptive statistics provide an initial understanding of the audit quality for each type of the two systems. Overall, the descriptive statistics presented in the table provide an initial understanding of the audit quality for each type of ERP system. However, further analysis is needed to determine if the observed differences in audit quality between the two systems are statistically significant and meaningful.

Table 4. Descriptive statistics.

PC		
Type of the set	On-site ERP system (n=318)	Cloud-computing system (n=112)
Valid	318	112
Mean	3.62	3.79
Std. deviation	0.92	0.95

6.1.2. Descriptive Analysis

This section discusses the Descriptive Analysis and provides an analysis of the impact of these systems on audit quality in [Table 5](#). The questions were designed to assess the auditors' perceptions of the impact of cloud-computing systems and on-site ERP systems on audit quality. As shown in [Table 5](#), the mean scores for all questions were above 3, indicating that the auditors generally agree that cloud-computing and on-site ERP systems positively impact audit quality. The results indicate a significant difference between the mean scores for all questions, with p-values of less than 0.001. Therefore, the findings of this study conclude that cloud-computing and on-site ERP systems significantly improve audit quality.

Question 1 and Question 2 both relate to the accuracy of financial statements. The mean score for Question 1 was 3.72, while the mean score for Question 2 was 3.48. According to the results, the mean scores differ significantly, as indicated by a t-value of 6.32 and a p-value below 0.001. This suggests auditors perceive cloud-computing systems as more effective in enhancing financial statement accuracy than on-site ERP systems. The use of cloud-computing systems had a statistically significant favorable influence on the accuracy of financial statements ($t=6.32$, $p<0.001$), the efficiency of the audit process ($t=7.98$, $p<0.001$), quality of the audit report ($t=7.15$, $p<0.001$), and reliability of audit evidence ($t=6.87$, $p<0.001$). The mean scores for these questions were all above 3.7, indicating that participants generally agreed that using cloud-computing systems improved audit quality.

Similarly, the use of on-site ERP systems had a statistically significant positive influence on the accuracy of financial statements ($t=4.71$, $p<0.001$), the efficiency of the audit process ($t=6.39$, $p<0.001$), quality of the audit report ($t=5.54$, $p<0.001$), and reliability of audit evidence ($t=4.81$, $p<0.001$). The mean scores for these questions were all above 3.5, indicating that participants agreed that on-site ERP systems improved audit quality. However, it is noteworthy that the questions related to the use of on-site ERP systems obtained slightly lower mean scores compared to the questions related to the use of cloud-computing systems. This suggests that participants may perceive cloud-computing systems as having a greater positive impact on audit quality than on-site ERP systems.

Overall, the survey findings indicate a favorable influence of cloud-computing and on-site ERP systems on audit quality in Saudi Arabia. Nonetheless, it is crucial to bear in mind that the outcomes are solely based on self-reported perceptions of audit quality and lack objective measures of the actual impact of these systems on audit quality. The survey results showed that both on-premises ERP and cloud-computing systems could significantly influence audit quality in Saudi Arabia. The findings provide valuable insights for auditors, accounting firms, and companies operating in Saudi Arabia to enhance the quality of their audit processes.

Table 5. Descriptive analysis.

PC #	PC item	Mean	Standard deviation	T-value	P-value
1	The use of cloud-computing systems improves the accuracy of financial statements.	3.72	0.92	6.32	<0.001
2	The use of on-site ERP systems improves the accuracy of financial statements.	3.48	0.89	4.71	<0.001
3	The use of cloud-computing systems improves the efficiency of the audit process.	3.89	0.97	7.98	<0.001
4	The use of on-site ERP systems improves the efficiency of the audit process.	3.73	0.93	6.39	<0.001
5	The use of cloud-computing systems improves the quality of the audit report.	3.79	0.96	7.15	<0.001
6	The use of on-site ERP systems improves the quality of the audit report.	3.66	0.93	5.54	<0.001
7	The use of cloud-computing systems increases the reliability of audit evidence.	3.76	0.95	6.87	<0.001
8	The use of on-site ERP systems increases the reliability of audit evidence.	3.61	0.93	5.88	<0.001

6.1.3. Hypotheses Testing

Table 6 presents the results of an independent samples t-test to compare the mean difference between cloud-computing systems and on-premises ERP systems. The analysis shows a t-value of -2.39, with 318 degrees of freedom (df), and a p-value of 0.017. The mean difference between the two groups is -0.17, with a standard error (SE) of 0.07. The 95% confidence interval (CI) for the mean difference is also provided, with the lower and upper bounds of -0.30 and -0.03, respectively. The p-value of 0.017 is less than the significance level of 0.05, indicating a statistically significant difference between the two groups. The results suggest that auditors' perception of ease of use (PEOU) significantly differs between cloud-computing and on-premises ERP systems.

Table 6. The independent samples t-test.

Independent samples t-test							
95% confidence interval (CI) for mean difference							
TAM variable	T	df	P	Mean difference	SE difference	Lower	Upper
PEOU	-2.39	318	0.017	-0.17	0.07	-0.30	-0.03

Note: P-value associated with the t-test is significant at $p < 0.05$.

This analysis suggests that using cloud computing systems leads to greater audit quality than on-premises ERP systems in Saudi Arabia. This is consistent with previous studies that have found that cloud computing can increase efficiency and accuracy in the audit process (Rahman & Ziru, 2022; Rosati et al., 2022). One possible explanation is that cloud computing systems allow auditors to access data and information from anywhere, leading to a more efficient and streamlined audit process. In contrast, on-premises ERP systems may be more limited in their accessibility and may require more manual processes, leading to a higher likelihood of errors and inefficiencies. However, it should be noted that the findings of this study are based on the participants' subjective perceptions and may not accurately reflect the actual audit quality. Furthermore, the research was conducted exclusively in Saudi Arabia, which may constrain the applicability of the results to other regions or countries. Future studies should examine the effects of cloud computing systems on audit quality in diverse settings and employ more objective measures to assess audit quality.

6.2. Discussion

Examining the outcomes of this study in relation to previous research can enhance the comprehension of the influence of cloud-based ERP systems and on-premises ERP systems on audit quality in Saudi Arabia. Prior studies have examined the role of technology in the audit process, including ERP systems, and their impact on audit quality. In a study conducted by Alsurayyi and Alsughayer (2021), they investigated the effect of ERP systems on audit quality in Saudi Arabia. Their findings indicated that ERP systems provide auditors with timely and accurate financial information. On the other hand, the findings of this study suggest that using cloud-computing systems instead of on-site ERP systems improved the accuracy of timely financial information.

Moreover, a study conducted by Hashed and Almaqtari (2021) investigated the effect of Information Technology (IT) governance on audit quality in Saudi Arabia. Their findings indicated that effective IT governance positively affects audit quality by enhancing the reliability and accuracy of financial information. Similarly, this study found that using cloud-computing and on-site ERP systems improved the reliability and accuracy of audit evidence. Additionally, a study by Taha, Ramo, and Alkhaffaf (2021) investigated the effect of cloud computing on auditing in a developing country. Their findings indicated that adopting cloud computing is a critical factor in auditing as it enables auditors to make informed decisions based on reliable and accurate data. Similarly, this study found that using cloud-computing systems improved the accuracy and reliability of audit evidence, thereby contributing to better audit quality.

This study's results have significant implications for audit quality in Saudi Arabia. Specifically, they suggest that implementing cloud-computing systems can substantially improve financial statement accuracy, audit process efficiency, audit report quality, and audit evidence reliability. The study's findings imply that audit firms in Saudi Arabia should increase their investment in technology to enhance audit quality. By demonstrating the positive impact of on-premises ERP systems and other technology tools, audit firms can enhance their competitiveness and meet the demands of clients who seek more efficient and effective audit services. As the business environment becomes increasingly complex and dynamic, auditors must keep pace with emerging technologies to deliver high-quality audit services.

This study examined how cloud-computing systems compare to on-premises ERP systems regarding their impact on audit quality from the auditors' perspective in Saudi Arabia. The study demonstrates that cloud computing significantly and positively affects audit quality. The unique insights provided by this study shed light on the potential benefits of cloud-computing systems and other technology tools for auditors, accountants, and managers to enhance audit quality and meet the growing demand for reliable and accurate financial reporting.

7. Conclusion

The objective of this study was to examine how the use of cloud-computing systems compared to on-site ERP systems affects audit quality in Saudi Arabia. The survey conducted on 430 auditors in Saudi Arabia showed that using both cloud-computing systems and on-site ERP systems improved the accuracy of financial statements, the efficiency of the audit process, the quality of audit reports, and the reliability of audit evidence. However, cloud-computing systems outperformed on-site ERP systems in all these aspects.

The study's results have significant implications for enhancing audit quality in Saudi Arabia, as they reveal that incorporating cloud-computing systems can elevate the quality of audits while also boosting audit process efficiency. Auditors should consider using cloud-computing systems and other technology tools to improve their audit quality and meet the growing demand for reliable and accurate financial reporting. However, it is important to consider certain limitations of this study while interpreting the results. First, the study was conducted in Saudi Arabia, and the results may not be generalizable to other countries. Second, the survey only included auditors, and the perspectives of other stakeholders, such as management and regulators, were not taken into account. Lastly, the study did not consider the costs associated with implementing cloud-computing systems, which could affect the decision to adopt these systems.

Future research can build upon the findings of this study and address its limitations by exploring the replication of the study in other countries to determine if the findings are consistent with other cultural and institutional settings. Additionally, another potential area for future research is conducting a study that involves other stakeholders, such as management and regulators, to investigate their perspectives on the use of cloud-computing systems and their impact on audit quality. Furthermore, it would be beneficial to investigate the costs associated with implementing cloud-computing systems to conduct a comprehensive cost-benefit analysis of adopting these systems.

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