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The Interactive Impact of the Big Data Environment on the Relationship Between Internal and External Audit Integration and the Quality of Financial Reporting

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Abstract: This research focus on the interactive impact of the big data environment on the relation between the integration of intrinsic and extrinsic audit and the existence of financial reports, the problem of the research is that the accuracy of financial reports is a significant factor incentive for investors, which reflects positively on the national economy, and is affected by the style of presentation of data and the extent of transparency in reflecting the company's financial situation, both internal and external auditors play a critical function in enhancing the integrity of financial services reports through the application of standards and control procedures, however, the big data environment, with its increasing size and constant change in data, may affect the role of auditing either positively or negatively.

The researcher used a questionnaire as a tool To collect data to achieve its goal consisting of (300) questionnaire forms distributed to a sample consisting of (auditors, audit managers, auditors, academic accountants) including Iraqi companies listed on the Iraq Stock Exchange and employees of accounting and auditing offices, (290) valid questionnaires were recovered for analysis, and the results were used for statistical analysis hypothesis tests were conducted using the program and appropriate statistical methods, the researcher has found that the integration of internal audit and external audit under the big data environment positively affects the quality of financial reports.

Keywords: Big data, internal audit, external audit, quality of financial reporting.

Introduction: The rapid technology and the increasing reliance on big data have led to significant developments and audit practices have undergone significant changes to enhance the correctness and quality of financial reports, the integration of internal and external audit processes for accounts is crucial to enhance the efficiency and effectiveness of auditing, it involves coordination, cooperation and information exchange. common goals include ensuring the correctness of financial reports, compliance with laws, risk management and the orientation of standards such as ISA 610, the Coso framework and the IIA standards for external auditors. both audits focus on risk assessment, data sharing and technological integration, encourages Compliance with corporate governance laws on cooperation, regular meetings and joint risk assessments help to harmonize audit efforts.

RESEARCH METHODOLOGY

The Research problem

The quality of financial reports serves as a crucial motivator for investors to engage in projects that stimulate the national economy and benefit the country as a whole. A significant determinant of financial report quality is the manner in which data and facts are presented, accurately reflecting the company's financial status. Both internal and external auditors play a pivotal role in enhancing the quality of

these reports through the enforcement of standards and procedures designed to regulate them. However, the effectiveness of auditors can vary depending on the environment in which they operate. This research was initiated to address this issue. This study aims to investigate the possible impact of the big data environment on the integration of internal and external auditors and the presence of financial reports, articulated via the following research question: Does the big data environment and the interplay between internal and external auditors influence the quality of financial reporting?

The Significance of research

The amalgamation of both internal and outside audits within a big data framework markedly elevates the accuracy and integrity of financial reports, and its significance can be examined from multiple perspectives, including the enhancement of audit efficacy, facilitation of integration of internal and external audits, bolstering compliance, and developing the quality of financial reports.

The Purpose of Research

The research endeavours to (assess the modified impact of the big data environment on the relationship between the quality of financial reports and the integration of internal and external audits).

Research Hypotheses

The study is predicated on the assumption that the big data environment alters the impact connection between the incorporation of internal audit and external audit in the quality of financial reporting.

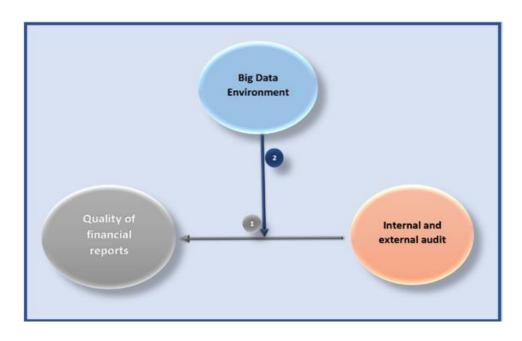


Figure (1-1) the hypothetical model of research **Source:** preparation of the researcher

Previous studies

The research entitled (Mohammed, 2023) " activating the role of external audit of big data and its impact on economic decision-making aims at an analytical study of offices and companies of audit offices and companies operating in the Kurdistan region of Iraq."To study the audit of big huge data and its impact on the economy decision-making process, the research used a descriptive analytical approach and a questionnaire to assess the awareness of companies and audit offices in the Kurdistan region using big data. The research has found that it focuses on the benefits of Big Data audit, but also focuses on the challenges and limitations it poses. it emphasizes the importance of specific procedures and mechanisms in the big data environment, and its ultimate goal is to enhance the economic decision-making process.

The research aims (Badawi, 2022) entitled "The Interactive impact of the quality of external audit and the effectiveness of the Audit Committee on the quality of financial reports: an applied study on nonfinancial companies listed on the Egyptian Stock Exchange" Apart from the modest influences of audit quality and efficiency, the study employs 224 annual observations from Egyptian companies that are not stated on the Egyptian Stock Exchange to examine how experience and the amount of meetings influence the quality of financial reports. The neutrality of the Committee of Auditing and its experience have been found by the research to enhance the quality of financial reports; the number of meetings does not appear to have much influence on this. De (De Santis, 2021) Auditing using large amounts of data and data. analytics: looking for legitimacy Examining the use of big data and data analytics in financial auditing, looking at the degree of its legitimacy, the elements supporting or impeding this procedure, and the actions performed by auditors, the analysis is based on informal conversations with associates and senior managers in Italian audit firms, the research has found that the big four companies are leading the process of audit innovation driven by digital audit. Though the process of its increased legalization within the professional context of auditing, the whole legality of this. procedure remains in question.

"Big Data analytics and financial reporting quality: qualitative evidence from Canada." The study by Saleh et al. (2022) looked at how Big Data Analytics. (BDA) affects the quality of financial statements and accounting problems in Canada. It used semistructured interviews with 127 participants—a

response rate of 32%—to find out what auditors, financial analysts, and accounting firms in Canadian accounting and auditing firms and the Securities and Investments and The field of accounting Commission of Canada thought about how auditing affected the quality of financial documents. The research found that big data and accounting issues are important for improving the functionality of financial reports because big data makes IT much better. To make expert judgment, financial reporting, and risk management better.

View literature

The significance and rationale for the combination of external and internal audits. The amalgamation of both internal and external auditing constitutes a strategic collaboration between the internal auditing department of the economic entity and external auditors, with the objective of enhancing the audit process, augmenting efficiency, and delivering a holistic perspective (Pramukti, 2024:77). Inside and external auditing integration refers to the collaboration between both internal and outside auditors within an economic entity to optimize the procedure for auditing, augment efficiency, enhance risk management, minimize redundancy, and offer a holistic perspective (Abass et al., 2023: 41). This integration is crucial for the economy to strengthen governance, risk mitigation, and control processes, thereby improving overall operations (Boulhaga et al., 2023:134).

External auditors should evaluate and value their work, as set out in IAS 610:

Provide a comprehensive Comprehension regarding internal control: independent auditors evaluate the efficacy of internal controls, facilitating their comprehension. the control environment and identify potential risks. (Nurhaliza & Kuntadi, 2025:3).

Assistance in risk assessment: internal audit reports help external auditors identify significant risks in financial reporting, compliance and operations, allowing them to focus on high-risk areas and adjust audit procedures accordingly. (Attaf & Bensbahou, 2025:182).

Sharing documents and evidence: internal auditors maintain detailed documentation of their assessments, findings, and recommendations, which can be reviewed by external auditors to understand the organization's operations. (Efe, 2025:63).

Reducing duplication: external auditors can avoid duplication of work by taking advantage of the existing tests and procedures of internal auditors, (Tümmler &Quick, 2025:28).

5. Conducting preliminary work: internal auditors conduct tests on internal controls and transactions, which the external auditor can use as part of their audit evidence. (Mauliani et al, 2025:8).

Objectives of internal and external audit integration

The integration of internal and external audits improves audit efficiency by reducing duplication, sharing information, reducing redundancy and simplifying procedures, resulting in cost savings and faster audit completion. the objectives of this summary are to enhance audit quality, enhance risk management, improve communication and coordination between internal and external auditors(Ebirim et al., 2024:518) internal auditors can provide valuable insights to external auditors, while external auditors can provide a new perspective, this approach ensures a comprehensive to the risk landscape of the economic unit, leading to more effective risk management strategies (Scott et al, 2024:201) strengthening compliance with regulatory requirements, maximizing audit coverage, promoting continuous improvement, building stakeholder trust, improving the use of technology, facilitating knowledge sharing by focusing on financial reporting regulations, internal auditors can reduce the risk of non-compliance and possible penalties (Igbinenikaro & Adewusi, 2024:4), this approach also allows for better allocation of audit resources, ensuring that critical areas receive the necessary attention integration promotes a culture of continuous learning, identifying areas for improvement in audits and governance practices, this approach can lead to the adoption of innovative audit techniques and improved methodologies for risk assessment(Suzuki & Takada, 2024: 1046).

Definition of big data

Big data refers to vast and intricate data sets produced every day from resources such as online media, sensors, and transactions, characterized by three elements: volume, velocity, and variety. (Ampatzidis, 2021:7), analytics aims to extract meaningful insights, patterns and trends from these data sets, often driving business decisions, process improvement and innovation in various sectors (Benjamin et al, 2024:231) big data and analytics are critical for business organizations, providing value creation and transparency and improve performance by identifying needs, variability and enhancing performance (Renaldo et al, 2024:203)

Big data and auditing

Big data has revolutionized auditing by enhancing efficiency, effectiveness and scope, it allows comprehensive data analysis, (Nwaimo, Adegbola et al, 2024:884), as well as, it enables real-time auditing, allowing auditors to monitor transactions and financial activities, enhancing the relevance and timeliness of audit results.(Sanusi et al, 2023:151) big data analytics promotes transparency and compliance by automating monitoring and reporting processes, ensuring that financial regulations are followed, and it also creates detailed audit trails, (Imoniana et al, 2023:196), big data can also detect abnormal situations in financial transactions, and predictive analytics help predict potential risks before they occur .(Olaiya et al., 2024:1318) and improving financial reporting by providing extended analytics, enables more informed decision-making, it also enables scenario analysis, forecasting the impact of financial strategies or market 2025:2920)automation conditions (Nyoni, efficiency are achieved through automated reporting, real-time reporting, detailed analysis, integration of non-financial data also works.

The concept of quality financial reporting

The quality of financial reporting ensures the correctness, reliability and usefulness of the company's financial statements, providing stakeholders with clear, relevant and consistent information about the financial performance of the economic unit, generally defined as quality is a measure of how well a product, service or process meets certain standards, requirements or expectations (Nyamwaya & Minja, 2025:203), it includes attributes such as reliability, performance, durability and customer satisfaction. in general, quality reflects the degree of excellence or excellence, and is judged against a set of criteria, such as effectiveness, efficiency or compliance with specifications.(Tague, 2023:257)

The Impact of internal and external audit integration on the quality of financial reports

The integration of internal and external audit functions leads to a significant improvement in the quality of financial reports, and this involves enhancing validity and reliability, improving risk identification and management, strengthening internal controls, processes simplifying reporting (Senna. 2024:13) familiarity of internal auditors with the operations and systems of the economic unit, coupled with independent verification of external auditors helps correct errors early in the reporting process, this dual

layer of audit ensures more reliable and correct financial statements(Aluvala, 2024:3), integration reduces duplication of work speed of identification and correction of problems, more consistent and high-quality financial disclosures, integration of internal and external prepare financial reports, improve fraud detection and improve stakeholder trust And facilitate continuous improvement (Oko-Odion & Udoh 2024:3078-3095).

The researcher posits that the incorporation of large amounts of data into auditing practices substantially enhances the quality of financial reports. By analysing extensive and varied sets of data, auditors may identify risks in real time, detect variations, and offer deep understandings, thereby augmenting the integrity and transparency of accounting records. The primary contributions encompass improved risk assessment, monitoring of deviations, continuous auditing, and comprehensive insights. Big data elevates the the quality of reporting on finances by addressing critical dimensions such as timeliness, precision, relevance, and transparency. Nonetheless, challenges persist, including data quality, skill deficiencies, privacy issues, integration, and regulatory compliance. In conclusion, the interplay between big data, auditing, and financial reporting markedly improves the quality of financial disclosures, bolstering stakeholder confidence and facilitating informed decision-making.

The Practical side Descriptive statistics and correlation relation

| | Convergence of internal and external audit functions | Big data environment | Quality of financial reports |
|---|--|-------------------------|------------------------------|
| Putting together internal and external audits | 1 | | |
| Big data environment | | 1 | |
| Quality of financial reports | ** 0.63 | 0.74** | 1 |
| Arithmetic mean | 4.07 | 4.15 | 4.30 |
| Standard deviation | 0.53 | 0.55 | 0.68 |

Table (1-2) descriptive statistics and correlation relations

- 1. At the 1% level of significance, the arithmetic mean of the integration variable between internal and external audits was 4.07 with a standard deviation of 0.53, which impacts the coherence of the respondents' responses. The the correlation coefficient between insertion and the Big Data Environment was 0.61, and the relationship between insertion and the quality of economic reports was 0.63.
- 2. Analytical mean of the big data environment variable was 4.1 with a standard deviation of 0.55, showing that respondents were in agreement. The correlation between environment and financial report quality was 0.74, with a significance level of 1%.
- 3. 3. The average value of the financial reporting quality variable was (4.30) with a standard deviation of (0.68), which is a significant value at the level of 1%.

Testing the hypothesis of interaction of study variables

The main hypothesis (the big data environment modifies the influential relationship of integration of internal and external audits in the quality of financial reports) the main hypothesis is concerned with verifying the interactive role of a variable(big data environment)on the relationship between the independent variable (integration between internal audit and external audit) and the dependent variable (quality of financial reports). in this test, two models can be relied on that reinforce the idea of interactive testing. the first is the intellectual model that illustrates the researcher's idea of the interactive role of a variable (big data environment), which can be expressed in Figure (1-2)

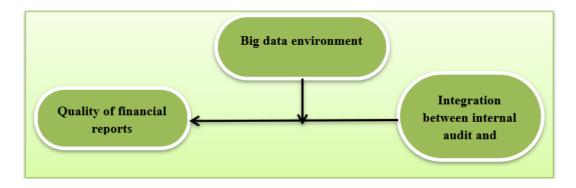


Figure (1-2) intellectual model of the interactive role of the big data environment variable

Source: preparation of the researcher

As for the statistical model within the structural modeling equation (SEM), figure (2-2) shows this as follows

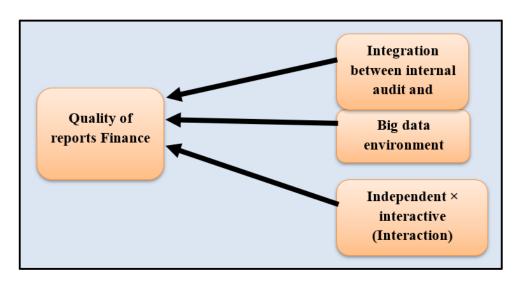


Figure (2-2) statistical model of interactive testing of study variables

To examine the interactive function of a variable (big data environment) in internal audit-external audit integration, researcher needs to determine the interactive relationships between the study variables, and this is done through the use of the interactive or modified analysis method (Moderation Analysis), as this method depends on the presence of at least three variables, the independent variable (independent Variable), the interactive variable (Moderator Variable) and the dependent variable (Dependent Variable), Interaction is carried out through the effect of a modified variable (dampening) Structured data may reveal the changed influence of the independent variable on the dependent variable. Modeling equation The framework method (the role of the interaction variable is to produce an improved or modified effect in the study model, which contains an independent explanatory variable) and the responsive variable (dependent), the interactive variable (modified) may inversely reduce the effect of The Independent on the dependent variable.

Acceptance of the resulting interaction model depends on the significance of its values, if it appears that the interaction value was positive and significant, this indicates that there is an effect of the input of the interactive variable, based on which the effect of the independent variable increases in enhancing or explaining the changes that occur in the dependent variable, and that this effect is associated with the high level of availability of the interactive variable and its decrease (Mushaira et al., 2015: 3) to achieve interaction analysis, the input of the structural modeling equation is relied on through the analysis program (Amos, V.26) the scientific procedure for this is by creating a new variable structure to be added to the model in the statistical analysis program known as the interaction variable, and the form (3-2) shows the interactive test model and its impact trajectories vector from the independent variable (integration between internal audit and external audit) and the modified variable (big data environment) in addition to the

interaction variable that was created in the approved variable (quality of financial reports

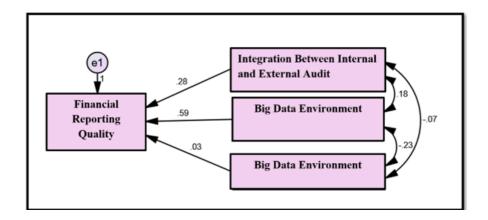


Figure (3-2) the regression path of the interaction model

Source: preparation of the researcher based on the AMOS V program.26

It is clear from figure (3-2) above and table (2-2) of the values of the overall test model of the current study and the level of moral significance of these values that they are all significant. this indicates that the effect of the modified variable (big data environment) is a positive effect that contributes to increasing the effect of the independent variable (integration between internal

audit and external audit) in the adopted variable (quality of financial reports), and thus the interactive variable has an effect in the relationship between the independent variable and the adopted variable and that these values and their significance were read according to the critical ratio C.R.(Which was worth more than(1.96) and is at a 5% morale level.

Table (2.2) testing the main hypothesis

| The dependent variable | Route | Variants | Estimate | S.E. | C.R. | Р |
|------------------------------|-------|---|----------|-------|--------|-------|
| Quality of financial reports | < | Integration between internal audit and external audit | 0.28 | 0.048 | 5.981 | 0.000 |
| Quality of financial reports | < | Big data environment | 0.59 | 0.048 | 12.274 | 0.000 |
| Quality of financial reports | < | The reaction variable | 0.03 | 0.013 | 2.310 | 0.039 |

Source: preparation of the researcher based on the AMOS V program.26

It is clear from the values in Table (2-2) that the non standard regression coefficient of the interaction variable reached (0.03), which is a significant value at the level of 5%, which means that effetely of the interactive variable(modified)in the relationship between achieving between internal audit, external audit and the quality of financial reports. This result can be explained that the big data environment variable modifies the level of in the quality of financial reports).

Combining external and internal auditing functions enhances financial reports by improving reliability, transparency, correctness, reducing financial errors and consolidating the confidence of stakeholders.

Implementing audit integration in a big data environment poses challenges such as data security, privacy and technology adaptation, necessitating advanced training of auditors to effectively use analytics tools.

CONCLUSIONS

- 3. The combination of external and internal auditing contributes to the development of the work of companies by providing common insights on this development, and how it can be implemented og reality.
- 4. Due to the nature of the work of both internal audit and external audit, both focus on the quality of specific information, the receipt of information may correspond to each other or may differ, which necessitates standardization of information of interest to both parties.
- 5. In general, there was a high awareness by the study sample of the significance of internal and external audit integration, which is useful in the future in laying common foundations for its development.
- 6. The big data environment is a big challenge for which requires close cooperation between the internal party and the non-external party.
- 7. The continuation of companies in the market depends on the success of their strategic decisions, which very much depends on the quality of financial reporting. 7
- 8. The positive correlation between internal and external auditing integration and the quality of financial reports indicates the great importance that companies should attach to achieving this requirement.
- If companies cope well with the big data environment, they can improve the caliber of their financial reports.
 and this is due to the increased readiness of auditors to deal with the challenges posed by that environment.
- 10. The positive and moral impact regarding internal audit's connection with external audit in the quality of financial reports can contribute to the development of economic activity in general and the activity of the companies concerned in particular by enhancing investor confidence in the credibility and transparency of their financial reports.
- 11. Using the statistical analysis's findings of the fifth hypothesis, the researcher deduced the validity and accuracy of the hypothetical research model, where she came to the conclusion that the availability of supplies that enable dealing with the big data environment can contribute to enhancing of integration between internal audit and external examination on the quality of financial reports.

Recommendations

- Establish a collaborative framework for Auditors inside and outside the company, to ensure clear communication, shared responsibilities, and joint audit planning to identify risks efficiently.
- 2. Policymakers and regulators should update auditing standards to the increasing use of big data in financial

reporting, while organizations should implement robust cyber security steps to protect and keep the security of data.

Increase the opportunities for cooperation and coordination between internal audit and external audit by contracting specialized offices and introducing internal auditors with development courses.

Benefit from the high awareness rates of the importance of inside and outside audit in order to enhance joint cooperation between the two parties.

Develop auditors' skills to deal with the challenges of the big data environment by expanding their skills in dealing with computers, software and artificial intelligence.

Integrating internal and external auditing has a positive effect on the quality of economic reports. To get the most out of this, companies must give the external auditor all the information they need in order to improve the transparency and openness of their financial reports.

Making the challenges of the big data environment a means and an incentive to learn new methods in data auditing and providing recommendations that will control operational costs, especially with regard to the method of data collection, management, storage and control.

The positive impact of huge environment in enhancing the relation between inside and outside audit integration is due to the development of external auditors' skills, especially in order to keep abreast of developments in dealing with data, which should prompt companies to contract with the best offices and work to benefit in those offices in order to develop the activity of internal auditors, as the big data environment is not only a challenge but an opportunity to learn new techniques.

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