



RESEARCH ARTICLE

The Relationship between Big Data, Audit, and Voluntary Disclosure: the Case of Iraqi Companies

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ARTICLE INFO	ABSTRACT
Received: May 22, 2024 Accepted: Jul 10, 2024	The study aims to present an analysis of the relationship between Big Data, Audit, and Voluntary Disclosure in the Cases of Iraqi Companies. The researchers employed a descriptive and analytical method, which is thought to be the most appropriate for investigations and research. This approach is based on accurately describing and interpreting a particular phenomenon, followed by collecting the necessary data related to the phenomenon being measured. In addition, the researcher adopted a quantitative investigative approach by constructing a questionnaire, which was sent to 60 responsible individuals in Iraqi industrial companies, with 20 individuals from each institution. Through this study, the researchers reached several significant conclusions. First, it was discovered that the sampled Iraqi enterprises could benefit from voluntary disclosure, enhancing transparency and aiding stakeholders like investors and financial analysts in making well-informed decisions. The analysis revealed strong correlations between dependent and independent variables, with correlation coefficients of 0.89, 0.87, and 0.92 for the first, second, and third axes, respectively. Further variance analysis supported the acceptance of three hypotheses: the significant impact of Big Data determinants on both audit processes and voluntary disclosures. Secondly, the study highlighted the profound influence of Big Data, characterized by its vast volume and complexity, on audit and disclosure practices within companies. This necessitates advanced data handling technologies and robust frameworks to manage data effectively while ensuring compliance with privacy laws and regulations. Lastly, the study proposes recommendations such as investing in data processing technologies, enhancing workforce skills in data analytics, and strengthening data security measures. These initiatives aim to harness the potential of Big Data for improving audit accuracy, enhancing voluntary disclosures, and mitigating associated risks, thereby promoting transparency and regulatory compliance.
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INTRODUCTION

The world has witnessed a scientific breakthrough facilitated by research in the field of technology. What was thought to be pure fiction has been verified by science. Data analysis and the use of its findings in marketing, innovation, and other areas are among the fields undergoing tremendous

change and creating a lot of buzz, affecting numerous sectors, health, and the economy. This revolution began with the emergence of the term "Big Data," which has accumulated thanks to new storage technologies and technological advancements that have become sources of data, such as computers, mobile phones, and internet-connected devices like televisions, household appliances, radar, navigation devices, and transportation means. These advancements have helped bring to the development of the Internet of Things. These devices have accumulated vast amounts of data unprecedented in human history, prompting Technological researchers will create methods and applications to mine and gather data from different types of stored repositories. This process involves complex and costly technical procedures, but the benefits of the results far outweigh the costs of analysis. Consequently, many tech companies have rushed to enter this field and have begun to rely on big data analysis in their unique ways, with the type of targeted data being determined based on the type of product or commodity.

In recent years, the use of big data and its analysis by companies has increased significantly. The growth rate in the big data technology market was 26.4% between 2018 and 2022, with an investment value of \$47.5 billion, approximately six times the overall IT market growth rate, according to the International Data Corporation (Reinsel, 2022: 45). Despite this, dealing with big data in accounting is still in its early stages, especially in Iraq. Data is considered the raw form of any knowledge content and represents a store of value when transformed into information. This transformation has been initiated by large tech companies and social media firms, which make significant profits by selling their customers' personal data and browsing habits for use in behavioral advertising.

The increase in the volume and variety of data in the current business environment, particularly by companies, has led to two perspectives: either ignoring this data or gradually adapting to it to understand and benefit from it in unconventional ways. For example, most companies do not utilize their customers' transaction data. If customer data is analyzed and processed, it can result in a deeper comprehension of these clients and the growth of relationships with them, giving you a competitive edge. Big data helps uncover actionable insights, identify the most crucial information for the organization, direct future choices, to comprehend clients better, increase sales, improve efficiency, optimize operations and customer service, detect risks, and enhance risk management. Investing in big data and learning how to use it can transform the business trajectory of all companies and institutions. However, small companies might perceive the cost of accessing big data as prohibitive, potentially dividing companies into data-rich and data-poor categories. This division enables data-rich companies to decode data secrets and sell them to smaller companies.

In light of the recent changes and developments in the accounting work environment and the shift towards a digital business society, the Global Association of Chartered Accountants, in collaboration with the Institute of Management Accountants in the United States, conducted a study on various change factors that could shape the accounting profession in the third millennium. The study's results indicated that the increasing complexity of the business environment, along with the intensifying global competition and shorter business cycles, pose challenges for the accounting profession. Additionally, the growing need to adopt international accounting standards and practices related to IT development has also impacted the future work of accountants and auditors. Therefore, those in the accounting profession must address the factors driving the development of the professional business environment, including the immense capabilities arising from internet usage, the implications of big data, and the increasing importance of data mining in accounting (Abdelwahed, 2023)

In this context, it is undeniable that the fundamental and ongoing changes in the current business environment, driven by significant technological advancements, have affected the nature of business operations and presented new challenges and impacts on the accounting profession. This situation

has prompted business organizations to consider how to use these modern technologies as effective tools for providing and delivering both financial and non-financial information to users. This is achieved by publishing integrated business reports and financial disclosures within the framework of what is known as integrated voluntary reporting, which is currently one of the most important accounting principles and a modern topic in the accounting field. It plays a crucial role in enriching the value of information presented in financial reports and statements. Moreover, it serves as an alternative to traditional reporting of financial and non-financial information, which is typically done periodically in a manner that conflicts with the technological advancements of the world, leading to delays in providing and delivering this information to users. This delay can result in the loss of some essential characteristics of accounting information and create a state of information asymmetry (Mcbride, 2022).

The economy now requires transparent reports through voluntary disclosure to overcome falsifications and significant misrepresentations in financial reports and statements, which can occur in various forms such as fraudulent accounting, earnings manipulation, or unintentional errors like inaccuracies in data collection and processing used to prepare financial statements. This necessity calls for investigating how big data analysis and processing can contribute to improving the quality and supporting the process of electronic disclosure and associated accounting practices (Srvanathi, et al., 2015).

In response to these developments and the significant impact of technological advancements on the preparation and dissemination of financial and non-financial information to users, major companies in the United States have started to prepare and publish their information through internet-connected websites. This approach paved the way for the adoption and application of the extensible Business Reporting Language (XBRL), which aims to be the unified language for encoding the content of financial reports presented to users. This language provides a standardized method for preparing and publishing financial reports and processing their information accurately and efficiently, thereby enhancing the immediate availability of this information to its beneficiaries (Agarwal, et al., 2021).

Thus, one of the most significant contemporary technologies that can be applied to this subject is big data technology. It gives users access to a wealth of data, knowledge, tools, and applications that may be used to reorder priorities to attain excellence and enhance cognitive abilities in the accounting profession. As a result, organizations can no longer afford to ignore or put off managing this data. To convert it into additional value, they must use technologies for data processing and analysis. In recent years, businesses have shown an increasing interest in using, analyzing, and processing big data. One of the primary motivations that encouraged the researcher's necessity arises from the rapid growth of big data and its nascent application in the fields of accounting and auditing in Iraqi companies. The significant recent interest in big data is due to its critical role in enhancing the competitive ability among economic units by promoting transparency and improving the financial performance of institutions. Additionally, it stimulates Iraqi institutions to commit to disclosure and enhance the quality of the auditing process. Therefore, this research will provide an outlook on the use of big data analysis and processing determinants in the voluntary disclosure of the informational content of integrated business reports and its impact on the auditing process. The goal is to increase the accuracy of accounting predictions regarding the financial position of companies listed on the Iraq Stock Exchange.

THERMOTICAL FRAMEWORK, LITERATURE REVIEW, AND STUDY HYPOTHESES

Recently, the world has witnessed significant literary, intellectual, and scientific activity, alongside an exponential rise in the volume of digital data accessible worldwide via satellites and different communication routes from internet-connected devices and systems. Experts have linked the quick rise in big data generation to the growing usage of digital media by organizations and people on social

media. In a knowledge-based society, data has become the main source of power since, when handled well, big data can greatly advance social and economic advancement.

This realization has led governments to acknowledge the importance of big data, resulting in the creation of practitioner communities and working groups to explore its potential uses and study its impacts. Consequently, Authors and researchers in the accounting industry have embraced the big data phenomena as a source of fresh insights and concepts that spur innovation and progress across all domains. It advances by raising productivity and competitiveness levels. However, these benefits can only be realized if institutions effectively use big data strategies to mine valuable data that provides opportunities for forecasting, making sound decisions, and monitoring progress toward achieving organizational goals.

The analysis and processing of big data have significantly contributed to the global economy's value, enhancing productivity and competitiveness across various types of companies. In this context, big data can be used as a new approach to retrieving external information via internet-based programs to support and confirm the valuation of tangible and intangible assets included in financial reports. External data sources such as web communication channels and web agents have become important data sources, providing information and tracking continuous changes in tangible asset values, customer behavior, and other elements impacting asset values (Murthy and Geerts, 2017: 89).

Although intangible assets are crucial accounting estimates in financial reports, recognized for their importance in knowledge, learning, innovation, and information technology as sources of competitive advantage, they are often not well-represented in budgets. With rapid technological advancements, several studies have indicated that big data analysis and processing will enhance the ability to gather and analyze data, revealing many items previously absent from budgets. Moreover, given the importance of inventory and its accurate valuation's impact on financial report quality, big data significantly influences inventory management through numerous techniques that generate vast amounts of data, which are integrated with other data via big data analytics. IT applications can revolutionize accounting information systems, enabling companies to prepare budgets, financial statements, and reports electronically, achieving cost savings, and reducing human errors (Galiano, et al., 2016: 93).

Big data is expected to offer significant opportunities in accounting measurement, influencing the accounting information system and presenting challenges and opportunities that impact accounting measurement. The potential expansion of integrated business reports will affect the accounting system by disclosing the informational content of these reports to various stakeholders and beneficiaries. It is important to note that disclosure rules are adaptable, and that big data can be used as raw data, necessitating accounting standards to address database content rather than current disclosure rules. Additionally, the extensible Business Reporting Language (XBRL) can be employed. Disclosure levels may extend beyond measuring business results (financial information) to other details not previously considered (non-financial information) such as business units, departments, sections, and products, aiming to provide complementary disclosures to meet stakeholders' and beneficiaries' needs (McAfee, 2021).

Adopting big data will eliminate some traditional accounting practices and transition to a largely automated accounting function. Management and Big data that isn't structured will replace organized financial data in financial accounting. It is becoming more and more necessary for accountants to evaluate both financial and non-financial data and create integrated business reports that show this. Big data is thought to be supplementary proof to the components of financial reports, likely proving the relationship between non-financial and financial data through integrated business reports. Consequently, financial accounting functions can significantly promote integrated thinking among organizations (Murthy, 2017: 56).

Some believe that big data can transform the accounting profession, particularly in budget preparation, management accounting systems, and supplementing original documents by providing additional evidence to justify recorded transaction values. Big data can also supplement financial statement assertions by management, such as existence and valuation assertions, which can be incorporated into non-traditional accounting data to enhance documentation and improve trust in accountants. Despite big data's growing relevance in accounting, accountants often have a limited understanding of converting such data into useful information. Thus, they should play a more effective role in managing and analyzing big data, leveraging their capability to identify decision-makers' information needs (Manyika, et al., 2011: 78).

Big data is expected to impact accounting by achieving data ownership advantages, handling volatile and conflicting data, and incorporating it into accounting disclosure processes. It will enable the formulation, storage, and analysis of new performance metrics, using this data for forecasting and increasing financial report transparency (Zikopoulos, et al., 2012: 102). Recent American Accounting Association (AAA) initiatives emphasize the significance of big data integration in accounting practices to achieve harmony between big data and accounting information systems (Wu et al., 2014: 95).

With the availability of data provided by big data technologies, the knowledge content in reports can be increased, contributing to the accuracy of stock price predictions in financial markets. This can support financial reports, enabling real-time modifications and disclosures, boosting investor confidence in corporate governance, reducing information asymmetry, and minimizing earnings manipulation, thereby enhancing financial report quality. Big data can influence financial reporting standards by offering fundamental information about data content, timing, and aggregation levels, forming the basis of measurement-related disclosure standards and rules. Big data provides a crucial, controlling feature for accounting disclosure standards to facilitate easy comparison for resource allocation and transparency assessment among stakeholders. Consequently, it requires reconsidering the concept of general-purpose financial reports and leveraging big data analytics to transition from traditional accounting roles to strategies that elevate accountants' roles, improving organizational performance, competitiveness, and excellence (Kwon & Wen, 2016: 63).

Big data influences companies' futures by enabling accountants to play a strategic, effective role through receiving instruction in the gathering and analysis of financial data and using their knowledge of non-financial data. They will also oversee the ethical use of big data, utilizing their data management and analysis skills. Therefore, accountants and financial professionals must understand big data-induced changes like cloud computing, digital services, and artificial intelligence, representing opportunities to redefine their roles and participation in decision-making (Sterling, 2023).

Big data will enhance the clarity and reliability of financial reports, leveraging business intelligence for correct information access with increased data trust and analysis capabilities. This evolution in their roles will shift from traditional cost monitoring to an organizational-wide perspective, seeking the best performance improvement methods. Li & Liu (2014: 87) argue that big data growth, coupled with advanced statistical analysis and sophisticated algorithms, will improve financial and managerial reporting, understanding the relationship between financial and non-financial data, thereby enhancing integrated business report quality. Reports containing more information demonstrate the ability to use data for strategic change rather than merely supporting existing organizational structures.

As data volume increases, its heterogeneous nature, the need for data flow analytics, and real-time response requirements make current data center architectures inadequate. However, advancements in tools and techniques for data collection, integration, and analysis for meaningful insights have enabled companies to innovate suitable tools for handling vast data volumes and reducing data

management issues. Modern technology has introduced blockchain databases, which securely store transaction records using various encryption methods, making transaction history manipulation difficult, and allowing automatic verification of accounting transactions among business partners while maintaining data privacy. Blockchain offers an alternative to traditional financial ledgers, with its core based on the "distributed ledger" theory, storing and preserving ledgers on a distributed computer network (McAfee & Brynjolfsson, 2019: 47).

Literature Review and Study Hypotheses

A study by Yeamin (2020), titled "The Impact of Big Data Analysis on Improving Accounting Information" highlighted how big data can help businesses' accounting information to be of higher quality. The study defined big data, highlighted the challenges of its analysis, and examined its impact on accounting processes and managerial decision-making. The findings revealed that big data provides companies with a competitive advantage, and aids in formulating plans, but also poses challenges such as a lack of expertise in analysis and a need for high storage capacity. Additionally, the study indicated a clear positive impact of big data on improving the quality of accounting information in companies. Abdel Razzaq (2021) study focused on using big data analysis and processing to improve the level of electronic disclosure of integrated business reports. The results showed a strong correlation between big data utilization and improved disclosure practices in businesses, which supports more precise and impartial stock price forecasts in financial markets. Harford (2020). While addressing the difficulties and dangers involved in its implementation, research on the use of big data analytics to enhance the quality of financial reports in businesses has shown how important big data is to produce high-quality financial reports. The study, which included a survey and data analysis, concluded that big data is essential for raising the caliber of financial reports, but it also identified obstacles such as a lack of infrastructure and training requirements and security and privacy issues. All these studies show that even though big data greatly improves the caliber of financial disclosure and accounting information, businesses still need to overcome several obstacles to fully realize their potential.

Accordingly, the following hypotheses can be formulated:

Hypothesis 1: There is a positive relationship between big data determinants and the auditing process.

Hypothesis 2: There is a positive relationship between big data determinants and voluntary disclosure.

Hypothesis 3: Big data determinants have a positive impact on both the auditing process and voluntary disclosure.

METHODOLOGY

The researcher used a descriptive and analytical approach to meet the study's goals, which is deemed the most suitable for research and studies. This approach is based on accurately describing and interpreting a particular phenomenon, followed by collecting the necessary data related to the phenomenon being measured. For the applied aspect of the study, the researcher used a qualitative research methodology by conducting interviews. Through these interviews, the researcher designed a questionnaire to elucidate the significant relationship between the research variables and their impact on the auditing process and voluntary disclosure. The analysis of the questionnaire was performed making use of statistical techniques such as regression analysis, factor analysis, T-test, coefficient of variation, arithmetic mean, percentages, frequencies, and Spearman's rank correlation. The study involved discussing and analyzing various aspects of the research and critically reviewing them to reach specific conclusions and answers to the posed questions. This was accomplished by referencing related studies, research, and literature on the study's topic.

In addition, the researcher adopted a quantitative investigative approach by constructing a questionnaire, which was sent to 60 responsible individuals in Iraqi industrial companies, with 20 individuals from each institution. The researcher also observed the records and accounting programs followed by each company. The researcher aimed to analyze the sample's responses—60 specialists—to learn more about "the determinants of big data and their relationship to the auditing process" using three axes of distribution for 47 variables. The first axis, "The article "Big Data Determinants and How They Connect to the Auditing Process" featured 22 items that addressed different facets of the subject. The second axis, "Determinants of Big Data and Their Relationship to Voluntary Disclosure," included fifteen sub-items that covered every variable on the axis in addition to three main items. "Impact of Big Data on Auditing and Voluntary Disclosure," the third axis, had ten elements. The SPSS software was utilized for data analysis, and Excel was employed for creating graphical displays.

RESULTS AND DISCUSSION

The Impact of Big Data on Auditing and Voluntary Disclosure

Table 1: Weighted arithmetic mean, standard deviation, coefficient of variation, and relative importance of the axis of reflection of big data on auditing and voluntary disclosure

Code	Variable	Arithmetic mean	Standard deviation	Coefficient of variation	Relative weight	Degree of agreement
X ₁	As the volume of data increases the complexity of auditing operations using big data analysis will be directly reflected in disclosure and auditing.	4.00	0.977	0.24	0.80	Agree
X ₂	Auditors need to use advanced analysis techniques and tools to ensure the honesty and accuracy of voluntary disclosure.	4.22	0.885	0.21	0.84	Totally Agree
X ₃	Artificial Intelligence and Big Data Analytics techniques can be used in audits to analyze information faster and more effectively, which contributes to better detection of exceptions and errors when making disclosures.	4.33	0.765	0.18	0.87	Totally Agree
X ₄	Big data analysis reflects the company's	4.55	0.502	0.11	0.91	Totally agree

	management's interest in increasing transparency in voluntary disclosure and providing more information in financial reports to clarify business operations and potential risks.					
X₅	Big data analysis improves decision-making processes, as providing access to expanded and diverse information contributes to making more accurate and effective decisions by better understanding trends and opportunities.	4.28	0.783	0.19	0.86	Totally agree
X₆	Big data enhances transparency and trust, as it can provide a clearer and more comprehensive picture of companies' performance and the social and environmental impact of their activities. This contributes to building trust between the company and various actors, such as investors, customers, and society.	4.27	0.841	0.19	0.85	Totally agree
X₇	Modern consumers expect companies to achieve positive results in the areas of sustainability and social responsibility, and if a company can provide accurate data about its efforts in these areas, including disclosure, this will	4.30	0.830	0.19	0.86	Totally agree

	meet consumer expectations and enhance its reputation.					
X₈	Leverage advanced analysis techniques such as machine learning and artificial intelligence to analyze patterns, detect anomalies, and provide significant analysis capabilities that allow huge sets of data to be examined effectively. The ability to detect errors and manipulate faster and more accurately.	4.27	0.800	0.18	0.85	agree
X₉	Using big data technologies to improve data quality, ensure its accuracy, and continuously monitor the performance of operations and activities to improve efficiency and increase productivity.	4.25	0.836	0.19	0.85	Totally agree
X₁₀	Companies can advance their auditing processes by leveraging the capabilities of big data and advanced analytics techniques.	4.45	0.723	0.16	0.89	Totally agree
X₁₁	The general arithmetic mean of the axis	4.29	0.79	0.18	0.85	Totally agree

Table 1 illustrates the findings which focuses on understanding the respondents' views on the impact of big data on auditing and voluntary disclosure. This axis comprised ten variables, all of which had weighted arithmetic means greater than the hypothetical mean (3). The responses primarily fell into two categories: complete agreement and agreement. Notably, nine out of the ten variables received a dominant complete agreement response at a rate of 90%, with only one variable **X₁** receiving an 80% agreement rate. This variable posited that the increased volume of data and complexity of audit operations using big data analysis would directly affect disclosure and auditing with a coefficient of variation of 0.24 and a weighted arithmetic mean of 4.00.

Variable X₄, which said that the analysis of big data reflects the company's management's commitment to enhancing transparency in voluntary disclosure and providing more information in financial reports to clarify business operations and potential risks, had the highest level of complete agreement for the nine variables.

The weighted arithmetic mean of this variable was 4.55, with a coefficient of variation of 0.11. It also had the highest complete agreement rate of all three axes, at 91%. This suggests that the respondents are aware of the value of applying big data analysis to reduce potential risks and enhance transparency. Regarding the remaining eight factors, the opinions of the respondents largely matched the goal of the axis, demonstrating the beneficial effects of big data on voluntary disclosure and the auditing process. This axis's overall average produced a weighted arithmetic mean of 4.292, along with an 86% full agreement rate and a standard deviation.

Testing the study hypotheses

After proving the first hypothesis in the first section of this chapter, which addressed the possibility of auditing and applying voluntary disclosure Correlation and regression correlations between the research variables in the study's sample companies will be examined. This involves putting the study's final three hypotheses to the following test.:

- Hypothesis 1: There is a positive relationship between big data determinants and the auditing process.
- Hypothesis 2: There is a positive relationship between big data determinants and voluntary disclosure.
- Hypothesis 3: Big data determinants have a positive impact on both the auditing process and voluntary disclosure.

Simple Linear Regression Test

Table 2: Test results according to Hub

The Hub	α	β	r	R^2	F	The significance
Determinants of big data and their relationship to the audit process.	1.04	2.23	0.89	0.79	26.3	Significant
Determinants of big data and their relationship to voluntary disclosure.	2.24	1.13	0.87	0.77	24.4	Significant
The impact of big data on auditing and voluntary disclosure.	1.66	2.11	0.92	0.85	35.16	Significant

Based on the findings presented in Table 2 above, several key insights can be derived. The analysis reveals robust correlations between the dependent and independent variables across all three axes examined. Specifically, the correlation coefficients were notably high: 0.89 demonstrating strong positive correlations 0.92 for the third axis, 0.87 for the second, and 0.94 for the first axis. Moreover, the coefficient of determination (R-squared) was substantial for each axis, underscoring the explanatory power of the independent variables. For the first axis, 79% of the variability in the dependent variable was accounted for, with the remaining 21% attributed to external factors. Similarly, the second axis explained 77% of the variance, leaving 23% unexplained by the model's variables. Notably, the third axis demonstrated the highest explanatory capability at 85%, leaving the remaining variance to external influences. Furthermore, the computed F-values were significant across all axes: The first, second, and third axes are represented by 26.3, 24.4, and 35.16, respectively. These values exceeded the critical F-value of 9.63 at a significance level of 1%, confirming the

statistical significance of the relationships. In summary, the results indicate robust and statistically significant correlations between the variables analyzed in each axis of the regression model, highlighting the strong predictive capacity spanning all research dimensions, of the independent variables on the dependent variable.

Multicollinearity

The concept of multicollinearity posits that there should not be a high correlation among independent or interaction variables because such high correlations could lead to issues known as multicollinearity. When variables or independent dimensions exhibit a high level of correlation, it becomes necessary to eliminate one of them during analysis, as their high correlation indicates that they measure the same thing. It becomes impossible to distinguish the unique effects of each variable on the dependent variables. Therefore, the primary goal of conducting this test is to verify the presence or absence of this issue. This test can be performed using statistical software such as SPSS.

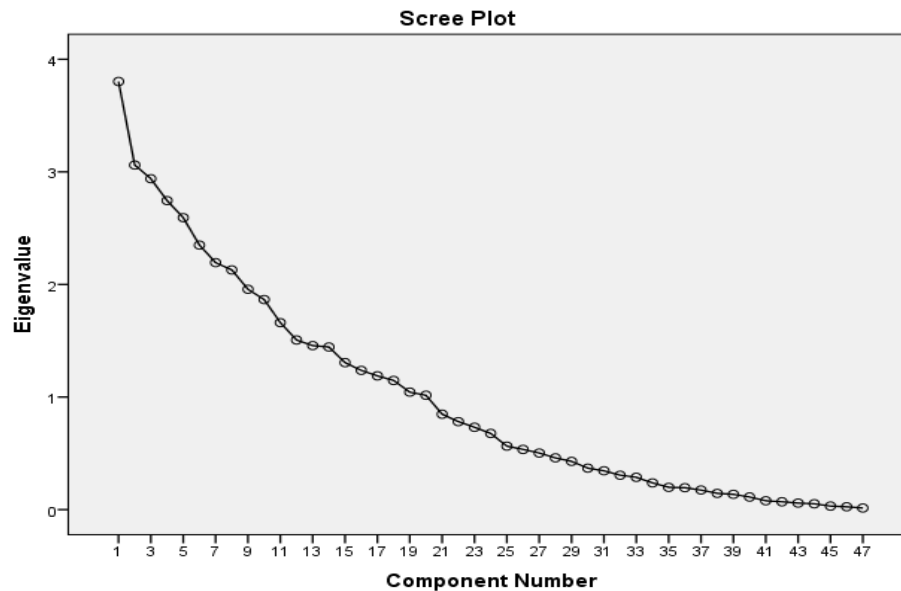


Figure 1: The 20 biggest factors

Factor Analysis

A statistical technique called factor analysis is used to assess correlation coefficients between variables that are statistically significant. To find the common characteristics that characterize and explain the link between these variables, it is necessary to simplify the relationships between the many variables that were analyzed. Two varieties of factor analysis exist.

- Exploratory Factor Analysis: This sort looks for hidden factors by determining their link to variables in an unknown situation.
- Confirmatory Factor Analysis: This kind evaluates hypotheses about whether variables and latent factors are related or not and determines how well the variables describe the dataset.

The factor analysis results for the survey data, broken down into dimensions, are shown below.

Certain presumptions are necessary to establish a solid factor analysis-derived conceptual foundation. Before performing confirmatory factor analysis, two important presumptions need to be confirmed. Testing the Kaiser-Meyer-Olkin (KMO) measure, which determines whether the sample size is appropriate and sufficient for conducting confirmatory factor analysis, is part of the first

assumption. A score of less than 0.50 indicates that factor analysis is not appropriate for the study data. The number goes from 0 to 1. This is demonstrated in the table below:

Table 3: Measurement range confirmation test (KMO)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.830
Bartlett's Test of Sphericity	Approx. Chi-Square	1376.819
	Df	1081
	Sig.	.000

The Kaiser-Meyer-Olkin (KMO) measure, which evaluates the sufficiency of sampling for factor analysis, results in a value of 0.830 based on the data listed in Table 3. Based on its statistical significance, this number surpasses the minimum acceptable criterion of 0.50, indicating great data sufficiency for factor analysis.

The test results allow for the deduction of various important conclusions:

- The initial dataset utilized for the research variables contains no missing values, ensuring the completeness of the data.
- The study's measurement scale shows no outliers, suggesting that the data points are within acceptable ranges and do not skew the analysis.
- The normal distribution of the data indicates suitability for parametric statistical methods, which are essential for accurately measuring and interpreting the study variables.
- There is no proof that there are problems with multicollinearity between the variables and dimensions being studied, which ensures the independence of the variables being analyzed.
- The main goal of the data analysis was to confirm that the measuring scale utilized in the study was accurate has been successfully achieved.

These findings are pivotal as they provide a robust foundation for further statistical analyses and interpretations within the research context, particularly concerning small and medium-sized economic units.

CONCILIATION

Through this study, the researcher reached a few important conclusions. First, it was discovered that the sampled Iraqi enterprises could benefit from voluntary disclosure enhancing transparency and aiding stakeholders like investors and financial analysts in making well-informed decisions. The analysis revealed strong correlations between dependent and independent variables, with correlation coefficients of 0.89, 0.87, and 0.92 for the first, second, and third axes, respectively. Further variance analysis supported the acceptance of three hypotheses: the significant impact of Big Data determinants on both audit processes and voluntary disclosures. Secondly, the study highlighted the profound influence of Big Data, characterized by its vast volume and complexity, on audit and disclosure practices within companies. This necessitates advanced data handling technologies and robust frameworks to manage data effectively while ensuring compliance with privacy laws and regulations. Lastly, the study proposes recommendations such as investing in data processing technologies, enhancing workforce skills in data analytics, and strengthening data security measures. These initiatives aim to harness the potential of Big Data for improving audit accuracy, enhancing voluntary disclosures, and mitigating associated risks, thereby promoting transparency and regulatory compliance.

REFERENCES:

- Abdel Razzaq, Sahar Mustafa, 2021, The role of internal audit in big data governance, *Journal of Accounting Thought*, Volume 25, Issue 1.
- Abdelwahed, Ahmed S., et al. "The Adoption of Big Data Analytics in the External Auditing: Bibliometric and Content Analyses." *International Journal of Auditing and Accounting Studies* 5.1 (2023): 49-85.
- Agarwal, Varsha. "The Convergence of Big Data and Financial Statement Auditing: Evidence from India." *Review of International Geographical Education Online* 11.7 (2021).
- Galiano, Angelo, et al. "Machine to machine (M2M) open data system for business intelligence in products massive distribution oriented on big data." *IJCSIT International Journal of Computer Science and Information Technologies* 7.3 (2016): 1332-1336.
- Harford, Jeff A. "A systematic approach to quantitative Western blot analysis." *Analytical biochemistry* 593 (2020): 113608.
- Kwon, O., & Wen, K. (2016). An empirical study of factors affecting big data adoption in SMEs. *Journal of Business Research*, 69(5), 1777-1785.
- Li, X., & Liu, L. (2014). Big data in logistics and supply chain management: A review. *International Journal of Production Economics*, 156, 57-70.
- Manyika, J., Chui, M., Brown, B., Bughin, J., Dobbs, R., Roxburgh, C., & Byers, A. H. (2011). *Big data: The next frontier for innovation, competition, and productivity*. McKinsey Global Institute.
- McAfee, A., & Brynjolfsson, E. (2019). Big data: The management revolution. *Harvard Business Review*, 90(10), 60-68
- McAfee, A., & Brynjolfsson, E. (2019). Big data: The management revolution. *Harvard Business Review*, 90(10), 60-68. Almashhadani, Mohammed, and Hasan Ahmed Almashhadani. "Internal mechanisms features, unfavorable behavior, and firm performance." *International Journal of Business and Management Invention* 11.4 (2022): 1-6.
- Mcbride, Karen, and Christina Philippou. "Big results require big ambitions": big data, data analytics and accounting in master's courses." *Accounting Research Journal* 35.1 (2022).
- Murthy, Uday S., and Guido L. Geerts. "An REA ontology-based model for mapping big data to accounting information systems elements." *Journal of Information Systems* 31.3 (2017): 45-61.
- Murthy, Uday S., and Guido L. Geerts. "An REA ontology-based model for mapping big data to accounting information systems elements." *Journal of Information Systems* 31.3 (2017): 45-61.
- Sravanthi, Kuchipudi, and Tatireddy Subba Reddy. "Applications of big data in various fields." *International Journal of Computer Science and Information Technologies* 6.5 (2015): 4629-4632.
- Sterling, Deloris, and Cynthia Onyefulu. "Undergraduate Students' Attitude to and Academic Performance in Accounting." *Open Journal of Accounting* 12.4 (2023): 106-130.
- Wu, X., Zhu, X., Wu, G. Q., & Ding, W. (2014). Data mining with big data. *IEEE Transactions on Knowledge and Data Engineering*, 26(1), 97-107.
- Yeamin, Jacky. Factors contributing to the implementation of data analytics in external auditing/Yeamin Jacky. Diss. University of Malaya, 2020.

Zikopoulos, P., Eaton, C., derooft, D., Deutsch, T., & Lapis, G. (2012). *Understanding big data: Analytics for enterprise-class Hadoop and streaming data*. McGraw-Hill Osborne Media.