

The role of big data in audit quality and fraud disclosure

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Abstract

This research examines the role of big data in audit quality and fraud disclosure within the scope of the audit. In the development and utilization of big data, there are certainly challenges to be faced, and an auditor needs to learn how to use and leverage big data in this modern era. The research object is the Regional Inspectorate of Samarinda City, One auditor as an informant. This study is a qualitative research with an ethnomethodology approach. Data collection methods include interviews and documentation. Data analysis methods include data reduction, data display, and drawing conclusions. The role of big data in audit quality and fraud disclosure plays a crucial role in the accounting world, especially in auditing. The Inspectorate greatly benefits from the presence of big data technology, which facilitates the examination and investigation processes. Moreover, big data technology also plays a crucial role in audit opinions and quality. Big Data not only enhances overall audit quality but also serves as an effective tool in uncovering and addressing fraud within the audit environment. The study underscores Big Data's vital role in enhancing government functions. Stakeholders, including auditors, leaders, developers, clients, regulators, and the government, must collaborate for effective integration and ongoing adaptation to technological advancements. The positive shift towards technology, driven by digitization, signals enhanced public service quality. Continuous commitment and investment in Big Data and future technological developments are crucial for efficient and effective services.

Keywords: Big Data, Audit Quality, Fraud Disclosure, Inspectorate, Government.

INTRODUCTION

The utilization of big data technology began to gain traction in Indonesia's private sector in 2013. Meanwhile, the adoption of big data in the government and public sectors remains limited (djkn.kemenkeu.go.id, 2023).

The Inspectorate serves as an internal oversight element for the implementation of Regional Government. It has the task of overseeing the administration of government in the region, with the main duty of assisting the Mayor in formulating policies and coordinating in the oversight field (*Inspektorat Kota Samarinda*, 2023). Various institutions in Indonesia have started constructing supervision databases as infrastructure towards big data, recognizing the importance of organizational changes to adapt to widespread cultural and technological changes globally.

Big data was initially introduced by Douglas Laney, bringing the concept of the 3Vs as a guideline for adoption and interpretation in both research and the application of big data. The 3Vs concept includes Volume, Velocity, and Variety. Volume refers to the flow of incoming data and cumulative data volume. Velocity represents the speed of data used to support interactions and generated by interactions. Variety indicates the diversity of data formats and inconsistent data structures.

The concept of big data has continually evolved, leading to several major companies such as IBM and Microsoft adopting the big data concept and incorporating additional attributes into its implementation. IBM introduced the attribute of Veracity, thereby embracing the 4Vs in their big data framework. According to IBM, the 4Vs are defined as Volume, representing data scale; Velocity, indicating data flow analysis; Variety, signaling differences in data forms; and Veracity, implying data uncertainty. Meanwhile, Microsoft added the attributes of Variability, Veracity, and Visibility to the big data concept, resulting in Microsoft adopting the 6Vs. The 6Vs, as defined by Microsoft, include Volume, representing data scale; Velocity, indicating data flow analysis; Variety, signaling differences in data forms; Veracity, focusing on the reliability

of data sources; Variability, referring to the complexity of data sets; and Visibility, emphasizing the need for a comprehensive understanding of data to make informed decisions.

As big data continues to evolve, both private and public organizations have started to integrate big data into their operational activities across all fields. In the accounting and audit domain, institutions such as the Supreme Audit Institution of the Republic of Indonesia, the Financial and Development Supervisory Agency, and the Inspectorate have begun implementing big data in their examinations.

Here is an example illustration of the use of big data in forensic accounting practices. Firstly, when accountants investigate cases of fraud, corruption, or bribery, they consider industry-specific regulations and use keyword phrases to identify potential fraud. Secondly, by utilizing historical activities or transaction data, accountants can employ predictive modeling and other analytical models to detect suspicious and unusual transactions, unusual occurrences, or behaviors and activities that may potentially indicate fraud. Thirdly, by mining data across multiple databases (such as customer databases or third-party databases), accountants can use entity resolution algorithms to identify hidden relationships, addresses, aliases, and investigate conflicts of interest, fake identities, or individuals and entities subject to sanctions. Fourthly, accountants use social network analytics to detect hidden relationships, fake vendors, or fake bank accounts when analyzing structured and unstructured data in visual formats and links from social media. Fifthly, a significant amount of unstructured text data is available from free-text fields consisting of journal entries, payment descriptions, expenditure details, emails, social media, documents, presentations, and hard drives of each employee and organization. Accountants use text mining or text analytics with heuristic rules and statistical techniques to discover sentiment and conceptual meaning from large amounts of text data, helping to identify potential fraud or non-compliance within the organization. Finally, in addition to traditional simple working papers or static charts, accountants use data visualization techniques and interactive dashboards to present evidence in an easily understandable way (Rezaee & Wang, 2019).

The fact that fraud in accounting causes significant economic damage has led to increased efforts to prevent such harm, resulting in developments and changes in both the audit and forensic accounting fields. It is in this context that the concept of forensic accounting was first discussed, followed by the evolution of the profession and the field of forensic accounting activities (Burcu İşgüden Kılıç, 2020).

Based on a fraud survey conducted by ACFE Indonesia in 2020, there were 239 cases of fraud, including 167 cases of corruption, 50 cases of misuse of assets/national and corporate wealth, and 22 cases of financial statement fraud. The total loss caused by fraud amounted to IDR 873,430,000,000, with an average loss per case of IDR 7,248,879,668. Moreover, 38.5% of the cases incurred losses exceeding IDR 1 billion. Corruption cases were the most prevalent, accounting for 69.9% of occurrences and resulting in a total loss of IDR 373,650,000,000. Misuse of assets ranked second, with 20.9% of occurrences and a total loss of IDR 257,520,000,000. Lastly, financial statement fraud accounted for 9.2% of occurrences, causing a total loss of IDR 242,260,000,000 (ACFE Indonesia, 2020).

From the survey, the damaging effects of fraud in the accounting field can be illustrated. Therefore, the science and practice of forensic accounting in auditing must continue to evolve to reduce the impact and occurrence of fraud cases.

Big data provides a larger and more imaginative information foundation that enables auditors to efficiently transform audit evidence into fraud risk factors. The integration of unstructured data also enhances the accuracy of audit evidence. This is because data collected from a large volume and diverse sources provides more comprehensive evidence and is less susceptible to administrative manipulation compared to traditional data (Tang & Karim, 2019). Therefore, big data can be one of the solutions for auditors in financial audits, enhancing audit quality and preventing fraud. Tang and Karim (2019) also outline the steps and applications in using big data as a tool for auditors in the audit process in their research, namely initial data collection, data integration, fraud indicator identifications, group meetings and discussions, conclusions, and documenting.

Paulina Roszkowska (2020) states in her research that blockchain, the Internet of Things, smart contracts, and artificial intelligence have different capabilities and can effectively solve various issues in financial reporting and auditing. This has significant potential to enhance the reliability of information in financial reports and transform the way businesses generally operate.

According to some interviewees, as clients interact more with big data tools, their expectations for the appropriate type of audit (and audit evidence) for their business change. With Big Data Analytics (BDA), companies appear to adopt an increasingly structured approach, automating the execution of audit tasks and encouraging auditors to use pre-packaged templates. Also, according to some interviewees, a potentially significant barrier to the widespread use of BDA is the fact that audit standards do not explicitly address this issue. While some reviewers see this lack of guidance as an opportunity for innovation, those who commented indicate that they would refrain from fully engaging with BDA unless they resolve what standard setters see as uncertainty surrounding the use of BDA, without fear of potential significant regulatory limitations (Salijeni et al., 2018).

Although big data can be a solution for auditors regarding financial reporting and auditing-related issues, there are still challenges in implementing big data. The limitation in applying big data is cost-effectiveness. Implementing big data tools during brainstorming sessions and other parts of the testing process can be expensive, especially when the system needs continuous updates to collect various types of data. Additionally, the choice to integrate big data tools partly depends on the audit cost and whether the client itself uses big data technology in its accounting operations (Tang & Karim, 2019). Big data still poses challenges for its implementation, such as the need to synchronize different data sources, a shortage of experts familiar with BDA, gaining insights from BDA, and uncertainty in data management, data storage, and data quality. Not only data but data security and data protection, the immense volume of data become impractical for applying commonly used analysis techniques in the audit process, privacy issues, and data analysis processes may require non-public client information beyond what is typically disclosed by auditors.

Therefore, by applying an ethnomethodological approach in the principles of qualitative research, which studies how individuals do something or the methods used to achieve something, ethnomethodology aims to understand how people perceive, explain, and describe the order according to their world or field. Through this approach, it is hoped to find solutions to these problems, namely the need for standards to underpin the use of big data, auditor involvement in the use of big data in audits to avoid audit errors in producing quality audit reports, and the role of big data in detecting, preventing, and disclosing fraud, thus addressing the challenges of big data itself. In this study, a factor absent in previous research is the examination of the Role of Big Data in Audit Quality, making it the researcher's primary focus to uncover the outcomes associated with the interplay of Big Data's role and Audit Quality.

Based on this background, the researcher wants to conduct research with the title "The Role of Big Data in Audit Quality and Fraud Disclosure."

LITERATURE REVIEW

Harold Garfinkel defined ethnomethodology as "the scientific investigation of the practical methods people use in producing social actions that can be understood" (Garfinkel & Bittner, 1967). In his work, Garfinkel emphasized the importance of understanding how people interpret and give meaning to everyday situations.

Herbert Blumer, a sociologist who contributed to the development of symbolic interactionist theory, also played a crucial role in the development of ethnomethodology. He defined ethnomethodology as "an explicit effort to spell out the basic principles used by individuals in producing understandable social situations" (Blumer, 1969).

One of the key contributors to ethnomethodology, Harvey Sacks, focused more on the analysis of conversation transcripts in social interaction. For Sacks, ethnomethodology is "an inquiry into how people make sense, especially through everyday talk and practical activities" (Sacks, 1992).

According to Prof. Dr. Lexy J. Moleong, M.A., ethnomethodology is the study of how individuals create and understand their daily lives or their methods to achieve daily life (Moleong, 1989).

From the above definitions, it can be concluded that ethnomethodology is an approach in sociology that focuses on how humans create and understand meaning in their everyday lives through social interaction. In general, ethnomethodology focuses on the detailed analysis of social interactions, conversations, and social practices that shape shared understanding among members of society. This approach highlights how people actively create meaning in their everyday situations and how this meaning

can vary across different contexts and cultures. This approach aligns with the research goal, requiring researchers to understand how individuals (auditors) can use big data to produce quality audits and prevent and detect fraud.

Big Data is a vast and complex collection of data that is challenging to process using conventional tools or techniques. It consists of three dimensions: volume, velocity, and data variety, requiring efficient technological infrastructure and algorithms to collect, store, manage, analyze, and extract valuable information from the data. This definition indicates that Big Data is a novel and intricate phenomenon, necessitating a new approach in managing and harnessing it (Buyya et al., 2016).

Big data was initially introduced by Douglas Laney, introducing the concept of the 3Vs as a guideline for adoption and interpretation in both research and the implementation of big data. The intended 3Vs concept includes Volume, Velocity, and Variety. Volume refers to the flow and cumulative volume of incoming data. Velocity represents the speed of data used to support interactions and generated by interactions. Variety signifies the diversity of data formats and data structures that are incompatible and inconsistent.

The concept of big data continually evolves, with major companies such as IBM and Microsoft adopting and adding attributes to its application. IBM introduced the Veracity attribute, resulting in IBM embracing the 4Vs in their big data. The 4Vs definition by IBM includes Volume as the scale of data, Velocity indicating the analysis of data flow, Variety indicating differences in data forms, and Veracity implying data uncertainty. Microsoft, on the other hand, added Variability, Veracity, and Visibility attributes to the big data concept, adopting the 6Vs. Microsoft's 6Vs definition includes Volume as the scale of data, Velocity indicating data flow analysis, Variety indicating differences in data forms, Veracity focusing on source data reliability, Variability referring to the complexity of data sets, and Visibility emphasizing the need for a comprehensive understanding of data to make informative decisions.

According to Tang and Karim (2019), Big Data is commonly defined as having the characteristics of the 4Vs: Volume (quantity), Velocity (speed), Variety (variation), and Veracity (accuracy), requiring support from large and complex information systems.

From these definitions, it can be concluded that Big Data is a new technology that will continue to evolve and can be applied by private and public sector organizations in their operational activities.

Audit quality is the opinion resulting from an audit conducted by an auditor. According to IAPI (Indonesian Institute of Certified Public Accountants) in Decision Number 4 of 2018 concerning the Guide to Audit Quality Indicators at Public Accounting Firms, it states the importance of the responsibility to provide an opinion on financial statements or other information issued by an entity. Therefore, auditors play a crucial role in enhancing the quality and credibility of financial information or financial statements.

In Indonesian, fraud is referred to as "kecurangan." According to the Kamus Besar Bahasa Indonesia (KBBI), fraud or "kecurangan" is defined as dishonesty or unfairness, and "mencurangi" can be interpreted as deceiving or tricking someone. According to IAPI in SA 240, fraud is an intentional act by one or more individuals within management, those responsible for governance, employees, or third parties. It involves the use of deception to unfairly gain an advantage or violate the law. IAPI also explains that fraud risk factors are events or conditions indicating an incentive or pressure to commit fraud or providing an opportunity to commit fraud.

Based on different behaviors and consequences, financial fraud can be classified into three types: financial statement fraud, financial fraud, and false financial sales. Of these three categories, financial statement fraud is closely related to daily bookkeeping and transactions because it involves intentional falsification of financial records, inappropriate use of accounting standards, revenue management, and other activities that create information asymmetry (Tang & Karim, 2019).

In conclusion, fraud is an intentional deceptive behavior performed by individuals or groups to gain an unlawful and unethical advantage for personal interests. This will be further discussed in this research.

RESEARCH METHODS

This research is a qualitative study with an ethnomethodological approach. The object of this study is Auditors from the Regional Inspectorate of Samarinda City. The research is conducted at the office of the Regional Inspectorate of Samarinda City located at Jl. Dahlia No.09, RT. 04, Bugis Village, Samarinda

City, East Kalimantan, Postal Code 75121. The chosen research location is because the Regional Inspectorate is a supervisory element responsible for providing guidance and supervision of local government finances and is adequate to address the research problem formulation.

This study utilizes qualitative data in the form of audio recordings, texts, images, and other materials obtained from the research location and will be further analyzed. In this research, the required data source is primary data. Primary data is data obtained directly by the author through interviews, documentation, and field notes.

Data collection is a process of acquiring data for research purposes. In qualitative research, data collection techniques can be applied from various sources. The data collection methods used in this study are interviews, documentation, and field notes.

Data analysis in this research employs the Miles and Huberman Model for analysis during the fieldwork. Miles and Huberman (1984) state that activities in qualitative data analysis are interactive and continuous until saturation is reached. The activities in data analysis include data reduction, data display, and conclusion drawing/verification.

The design of this research is employed to facilitate the understanding of the conceptual flow in this study, namely, the role of big data in audit quality and fraud disclosure.

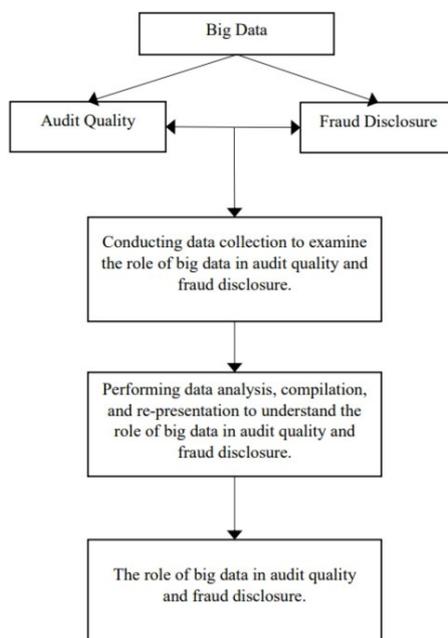


Figure 1. Conceptual Framework

RESULTS AND DISCUSSIONS

As an auditor working in the government sector, such as the Inspectorate, which serves the assurance function encompassing audits, reviews, monitoring, and evaluation, as well as performing consulting functions involving guidance, socialization, and advisory services to Regional Work Units (OPD) when facing issues. Big Data has a significant and widespread impact on various aspects of life. Its use is not confined to a specific job sector or organization type but has permeated into daily life. With technological advancements, especially in artificial intelligence, Big Data has become a primary pillar in facilitating various activities and decision-making. This conclusion underscores the relevance and importance of Big Data in the modern context. In this discussion, the interview results will be presented in accordance with the sequence of questions.

The first question is, "What is your role in the organization, and how is the job related to Big Data Analytics (BDA)?"

From the interview results, it can be concluded that the role in the Inspectorate is as an auditor with a focus on overseeing and improving governance, risk management, and internal controls in departments and Regional Work Units (OPD). The relevance of the job to Big Data is significant because,

as an auditor, she is involved in analyzing and processing data as a preliminary step before drawing conclusions. This conclusion highlights the importance of the role of Big Data in supporting oversight and internal control functions in the government environment.

The second question, "What are the main developments that have occurred in terms of BDA in your organization in recent years?"

From the interview results, it can be concluded that since working at the Inspectorate in 2013, there has been significant development in data management. Initially, everything was manual, but with the advancement of Big Data, there has been a transformation towards more efficient data processing, with data that is easily accessible and presented in digital formats. The COVID-19 pandemic has also provided an extra boost to the use of this technology. This conclusion emphasizes the importance of Big Data in speeding up and improving data management efficiency in the Inspectorate environment.

The third question, "Are you aware of the factors that have influenced the use of BDA in your organization and in the field of audit in general?"

From the interview results, it can be concluded that the factors influencing Big Data in the Inspectorate and the audit field generally involve the progress of the times as a primary factor. The importance of commitment and competence improvement is acknowledged as a crucial step to keep up with technological advancements, especially in Big Data management. This conclusion reinforces that adapting to the progress of the times and investing in technological competence are key to understanding and managing Big Data in the audit context.

The fourth question, "Can you explain the aspects of BDA that you consider most valuable for you personally, your organization, and your clients?"

From the interview results, it can be concluded that the most valuable aspects of Big Data are related to financial and employee data management. The implementation of an electronic-based governance system is also recognized as a crucial factor. This aspect not only facilitates the financial audit process but also simplifies the search for employee data, including in situations where individuals are hard to trace. This conclusion emphasizes the value of Big Data in supporting operational efficiency and examinations in the government environment.

The fifth question, "In your opinion, which party is the most committed and active in promoting BDA in audits? Can you provide a specific example to illustrate this commitment?"

From the interview, it can be concluded that BPKP, as the supervisory body for auditors, is the most committed party in promoting the use of Big Data in audits. The role of organizational leadership is also recognized as crucial in enhancing the commitment and competence of employees related to data management. This conclusion emphasizes the importance of support and guidance from authorities with significant influence in driving the implementation of Big Data in audit practices.

The sixth question, "How would you describe the current state of audit technology development related to BDA?"

From the interview, it can be concluded that the development of audit technology related to Big Data has undergone significant transitions. From manual audits, there is now a practice of remote audits using technologies like Zoom. The use of social media for data search and profiling is also a characteristic of this development. Various applications, such as SIPD (Regional Financial Management Information System), SIMDA (Regional Management Information System), and Jaga ID (for corruption prevention), provide support for data evaluation and analysis. This conclusion indicates a paradigm shift in audit practices, increasingly adopting technology for better efficiency and effectiveness.

The seventh question, "In your view, are there parallels that can be drawn between developments related to BDA and other changes in previous audit technologies, such as Statistical Sampling or Business Risk Audit?"

From the interview results, it can be concluded that there is a connection between the development of Big Data and previous audit technologies. The use of Big Data facilitates the process of data analysis and processing, allowing ease in conducting sampling related to financial statement reviews. With the identification of high-risk OPDs, audit focus can be directed to more critical and relevant areas. This conclusion demonstrates a seamless integration between the development of audit technology and the utilization of Big Data to enhance efficiency and effectiveness in conducting financial reviews and audits.

The eighth question, "What is your view on the possible impact of BDA on audit delivery, namely the audit process and its quality?"

From the interview, it can be concluded that the interviewee's perspective on the impact of Big Data on the audit process is very positive. Big Data provides significant assistance, especially in time efficiency. The use of data analysis and Big Data also contributes to the ease of data filtering and analysis, as well as faster conclusions. This positive impact directly enhances the quality of audit results. This conclusion indicates that the implementation of Big Data provides tangible benefits in improving the efficiency and quality of the audit process.

The ninth question, "Can you recall a recent event where you or your colleagues were involved in promoting BDA? What is your assessment of the results produced? What are the biggest obstacles to the development of BDA in the audit context?"

From the interview, it can be concluded that being involved in the development of applications for the assessment of SAKIP (Performance Accountability System of Government Institutions) is a recent activity. The biggest obstacles in the development of Big Data in the audit context involve the similarity of perceptions between OPDs and evaluators, a lack of understanding from some OPDs regarding the use of applications, and the evaluation targets of the Corruption Eradication Commission (KPK) related to Jaga.id to assess regions prone to corruption. This conclusion indicates that, although there is progress in application development, challenges in perception and understanding remain major obstacles in adopting Big Data in the audit context.

The tenth question, "What is the client's perception of the use of BDA by the audit firm?"

From the interview, it can be concluded that initially, audit clients (Inspectorates) faced difficulties in adapting to the use of Big Data. However, over time, they successfully transitioned from more manual methods to the use of applications and technology. Although not yet at the maximum level, progress toward a paperless environment and the use of technology has brought positive changes to the audit process, making it faster and more convenient. Additionally, audit clients' complaints about the use of Big Data have also decreased with the increased adoption of technology. This conclusion indicates that the shift toward technology has had a positive impact in overcoming initial challenges and improving audit client satisfaction.

The eleventh question, "How do you encourage your clients to consider BDA? What specific approach do you use? How do you justify the value of BDA to clients?"

From the interview, it can be concluded that the approach to encourage clients to use Big Data involves the obligation to input data into the application, providing assistance if needed, and socializing the need to align perceptions related to technological advancements. These points are emphasized by highlighting the ease and efficiency of using the application to report monthly performance evaluation results. Although the change has not reached the maximum level, full support is given to encourage the use of Big Data, and the changes that have occurred are considered remarkable. This conclusion indicates success in integrating Big Data into audit practices, although there is still room for further improvement.

The twelfth question, "How do clients respond to this approach?"

From the interview, it can be concluded that the response from OPDs to the approach of using Big Data has been positive. They have been able to keep up with the times and show no resistance to changes and technological developments. This conclusion indicates that the approach taken in implementing Big Data has been successfully accepted and adopted by OPDs.

The thirteenth question, "To what extent is BDA used in providing other assurance services?"

From the interview, it can be concluded that Big Data is widely used in the provision of services by the city government. This usage includes various levels of services, including departments, sub-districts, and neighborhoods. The main goal is to facilitate services to the public and improve the overall quality of public services. The focus on digitization in the context of bureaucratic reform reflects the government's efforts to enhance the efficiency and effectiveness of public services by leveraging technology, including Big Data. This conclusion demonstrates the government's commitment to utilizing technology to provide better services to the public.

The fourteenth question, "What is the regulator's and standard-setting body's perspective on the use of BDA in audits?"

From the interview, it can be concluded that the regulator's and standard-setting body's perspectives on the use of Big Data in audits encompass policies related to the Electronic Governance System (SPBE). The review process is conducted on applications created by the city government, focusing on security aspects, architecture, Standard Operating Procedures (SOP), and preventive measures related to application security. So far, the policy book development process is underway at Diskominfo regarding regulations on the use of Big Data. This conclusion indicates that the city government has significant involvement and attention to regulation in the use of Big Data in audits and technology-based government services.

The fifteenth question, "What is your assessment of the future prospects of BDA technology in the audit context?"

From the interview, it can be concluded that the assessment of the future prospects of Big Data technology in the audit context reflects optimism about its ease of use but also an awareness of the challenges posed by increasing sophistication. The focus on digital forensic learning and the development of forensic laboratories indicates efforts to enhance capabilities in detecting and tracing increasingly sophisticated fraud. This conclusion reflects an awareness of the importance of keeping up with technological developments to remain effective in addressing fraudulent activities.

As for the comparison with previous literature, Tang and Karim (2019) argues that Big Data analytics can enhance the effectiveness of brainstorming by providing a comprehensive information base, generating reliable results from analytical procedures and facilitating communication among auditors. This is in line with the findings of this research, as Big Data is highly effective in providing reliable information and facilitating auditors in communicating and requesting data with clients.

Salijeni et al. (2018) argues that BDA affects the relationship between auditors and their clients, as it changes the nature and availability of data, the expectations and demands of the clients, and the opportunities and challenges for the auditors. BDA influences the conduct of the audit, as it introduces new tools and methods for planning, risk assessment, evidence gathering, analysis and reporting. BDA also enables more automation, outsourcing and remote auditing of some audit tasks. BDA poses common challenges for embedding it in the audit context, such as the need for adequate skills, training, standards, guidance, quality control and independence. BDA also raises questions about the role and value of auditing in a data-driven environment. This is consistent with the findings of this research because big data has a positive impact and facilitates clients and auditors in gathering evidence to be examined. Both auditors and clients must also adapt to using big data, as it still poses challenges that need to be faced and studied beforehand.

Rezaee and Wang (2019) argues that Big Data can enhance the effectiveness and efficiency of forensic accounting. The paper identifies several attributes and techniques of Big Data, such as availability, reliability, accessibility, relevancy, analytics, and visualization, that can help forensic accountants to perform data mining, modeling, analysis, and presentation in their investigations. This is also in line with the research findings, namely the techniques in using big data employed by the Inspectorate in various applications implemented by the government, facilitating the rapid and easy transfer of data between Regional Work Units.

Paulina Roszkowska (2020) proposes that blockchain can enhance information reliability, immutability, traceability and transparency in financial statements, while IoT can automate data entry and asset tracking, and smart contracts can enforce accounting rules and assign responsibilities. This is also in line with the research findings, as almost all applications developed by the government are application-based, web-based, and connected to the internet, making it easier for the Inspectorate to track and gather evidence in its audits.

Manitaa et al. (2020) demonstrates that digitalization impacts audit firms at five levels: (1) improving the audit relevance and quality, (2) extending the audit offer and developing new services, (3) redefining the auditor's profile and embodying a culture of innovation, (4) changing the audit process and methodology, and (5) enhancing the firm governance and limiting the managers' discretionary power. This is in line with the findings of this research because the Inspectorate consistently evaluates examination techniques, technology or applications, information quality, and always conducts training on big data technology if there are new applications issued by the government.

Kend and Nguyen (2020) argues that BDA, AI, and robotics have positive effects on auditing, such as increasing audit quality, efficiency, and value, and allowing auditors to focus on more critical and judgemental tasks. BDA, AI, and robotics also pose some challenges and risks for auditing, such as requiring new skills and competencies, creating entry barriers for smaller practitioners, and raising ethical and regulatory issues. This aligns with the findings of this research because the Inspectorate is greatly assisted by the presence of big data, making their inspections more effective and efficient. With applications, websites, and the internet, the Inspectorate can gather quality information. This aspect is crucial in forming audit opinions and enhancing audit quality.

As for some practical implications for stakeholders. Government Auditors (Inspectorate), The findings emphasize the crucial role of Big Data in enhancing oversight, internal control, and risk management functions within government sectors. To leverage these benefits fully, auditors should continue adapting to technological advancements, particularly in Big Data management.

Organizational Leadership and BPKP (Supervisory Body), Recognizing BPKP's commitment, organizational leaders should further support and guide auditors in implementing Big Data practices. This involves continuous investment in technological competence, ensuring auditors keep pace with advancements for efficient and effective audit processes.

Technology Developers, Developers involved in creating applications for government evaluations, such as SAKIP, should focus on addressing challenges related to the perception and understanding of Big Data among OPDs. Continuous efforts are required to overcome obstacles and ensure successful adoption.

Audit Clients (Inspectorates), Audit clients' initial challenges in adapting to Big Data indicate the need for ongoing support and encouragement. The positive shift towards technology suggests that continuous efforts in promoting the ease and efficiency of Big Data applications can enhance client satisfaction and further streamline audit processes.

Regulators and Standard-Setting Bodies, The involvement of regulators in policies related to the Electronic Governance System (SPBE) underscores the importance of comprehensive review processes. Ongoing efforts in policy book development at Diskominfo reflect the city government's commitment to regulating Big Data usage in audits and technology-based services.

Government in General, The widespread use of Big Data in various levels of government services, driven by the focus on digitization, indicates a positive trend towards enhancing public service quality. Continued commitment to leveraging technology, including Big Data, is crucial for providing efficient and effective services to the public.

Future Technological Development, The optimistic outlook on the future prospects of Big Data technology in audits suggests a continuous need for adaptation. This includes investments in digital forensic learning and the development of forensic laboratories to address the challenges posed by increasing technological sophistication and fraudulent activities.

Overall, stakeholders should collaboratively work towards embracing and maximizing the benefits of Big Data in the audit context, fostering a culture of technological innovation, and addressing challenges to ensure its effective integration into audit practices.

CONCLUSION

Big Data plays a crucial role in supporting audit quality at the Inspectorate. The integration of Big Data allows auditors to analyze and process data more efficiently, providing a strong foundation before drawing conclusions. With a focus on supervision, governance, risk management, and internal control, Big Data becomes an essential tool in supporting oversight functions and enhancing the effectiveness of audits in the government environment. Big Data also plays a significant role in fraud detection. The development of tools and forensic laboratories, along with a focus on digital forensics, indicates efforts to enhance capabilities in detecting and tracing increasingly sophisticated fraudulent activities. This conclusion affirms that Big Data not only improves audit quality in general but also serves as an effective weapon in uncovering and addressing fraud within the audit environment. In conclusion, the findings underscore the critical role of Big Data in enhancing oversight, internal control, and risk management functions within government sectors, particularly for Government Auditors (Inspectorate). To fully

leverage these benefits, auditors need to adapt to technological advancements in Big Data management. Organizational leadership, BPKP (Supervisory Body), technology developers, audit clients, regulators, and the government, in general, play vital roles in supporting and guiding the effective integration of Big Data into audit practices. Ongoing efforts in policy development, addressing challenges, and promoting technological innovation are crucial for realizing the potential of Big Data in audits and ensuring efficient and effective public services. The optimistic outlook on future technological development emphasizes the need for continuous adaptation to address challenges and maximize the benefits of Big Data in the audit context. Collaborative efforts among stakeholders are essential for fostering a culture of innovation and ensuring the successful integration of Big Data into audit processes. The limitations of this study include a small number of informants and limited references to previous research due to the scarcity of studies investigating big data in the scope of audits using qualitative methods and interviews. For future research on big data in the audit scope, it may benefit from a larger number of informants providing the necessary information and employing even more effective qualitative data analysis techniques.

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