

THE IMPACT OF BIG DATA ON FINANCIAL REPORTING

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ABSTRACT

Big data analytics can influence financial accounting by collecting, recording, and managing data and preparing financial reports. Big data provides convenience and speed of access to transaction data streams. By using big data, accountants in an organization can access transaction information more quickly and can work on large-scale transactions. This study aims to examine the influence of big data on financial reporting with Quantitative Evidence from Indonesia. This research uses quantitative methods. The data used in this study are primary data obtained from the study subject in the form of a questionnaire. The data obtained is processed using SPSS 25. The results of the hypothesis test stated that the analysis of big data has an effect on the quality of the report. This means big data technology as a resource internally owned company can improve the company's financial performance.

Keywords: Big Data, Financial Reporting, Financial Report Quality, Information Quality

INTRODUCTION

During the Covid-19 pandemic, there has been a change or change in the way the internet is used or used. Previously, internet usage arrangements were made in the office. Campuses, schools, and public places. But nowadays, the pattern of internet use is shifting towards homes, residences, and educational institutions. In Indonesia, the number of internet users increased significantly from year to year until January 2022, with the number of internet users reaching 204.7 million people in Indonesia. The rapid development of internet technology has changed the way companies do business. Internet technology offers facilities and convenience to companies to present financial information in a high quantity, relatively cheaper cost, and can reach its users without limited places and geographical barriers. The development of information and communication technology allows data sets to become more accessible. New types of data are emerging, such as real-time content and Big Data Analytics (BDA), helping to solve problems between users and financial reporting and accounting. The purpose of big data in accounting is to collect, organize, and utilize data from various sources to gain new business knowledge (Wamba et al., 2016).

Big Data continues to be more accessible and offers more opportunities for analysis. As expected, the company quickly digitized and collected countless amounts of data for forecasting, fraud prevention, and relationship building. Big data has become a widely used term to describe large data sets that require advanced data management techniques. Reporting from Kominfo.go.id, Johnny G. Plate explained in the digital era, technological advances in the form of big data, artificial intelligence, and metaverse can enrich the data and analytics needs of the media industry for content production and distribution. The financial sector generates large amounts of data, such as customer data, records of their financial products, transaction data that can be used to support decision-making, as well as external data, such as social media data and website data. The Deputy Director of Academic Affairs points out that navigating transitions and adapting to digital advancements is the key to success as an accountant in the digital age. Therefore, the accountant must certainly deepen his knowledge and understanding of technology, and big data will create

added value and opportunities, not only for individuals but also for entities. "If accountants or we don't follow digital transformation, it won't be an opportunity, but it will turn into a challenge, even a threat (Zragat, 2020). According to the U.S. Bureau of Labor Statistics, employment for accountants and auditors grew by 4% between 2019 and 2029. U.S. News & World Report mentioned that accountants ranked thirteenth on the list of best business jobs for 2021.

For companies with increasing data volume, companies have two options, using the data to increase competitiveness or ignoring the data. Businesses always use data and information to support decision-making and operations management. Big data includes many types of data that can be utilized, such as images, voice recordings, and video. To convert data into value-added, companies must use data analysis tools. Companies need data to develop accounting criteria with a focus on analytical data to improve information, investor attractiveness, and capital market efficiency. Big data is one of the most pressing challenges in the accounting profession, which faces many challenges, such as rapid financial and economic changes, financial corruption, globalization, and unfamiliarity with new developments in information technology. Recently, the quality of accounting information has become very important because the crisis of business organizations has a negative impact on users of financial statements. According to Gordon B. Davis, an expert in information systems management, data is symbols or logic that must be arranged and arranged so that we can get results from the data itself. Technology brings convenience to business. It led to the emergence of many dynamic new businesses and increased competition. Previous researchers researched the impact of Big Data Analytics on improving financial statements in the Saudi environment. Based on this background, the author is interested in analyzing the impact of Big Data on financial statements in Indonesia. The purpose of this study is to find out what big data is and its impact on financial statements in Indonesia.

Literature Reviews

Big Data

Big data is a large, diverse, and rapid flow of information that requires the use of innovative and economically efficient processing methods for the purpose of developing decision-support methods and automating processes. (Younis, 2020) Big data is a data set characterized by quantity, speed, variability, variance, accuracy, and validity. It cannot be processed efficiently by traditional technology.(Younis, 2020)

Big data is divided into 3; First, structured data is data stored in a database field. It can be managed, analyzed, and searched using SQL (Structured Query Language). Both unstructured data are data that cannot be easily classified such as images, graphics, video clips, PDFs, presentations, emails, tweets, web pages, Facebook messages, conversations messages. Third. Semi-structured data is a mixture of structured and unstructured data, but it lacks an organized structure like a word processing program(Younis, 2020). Big data has five characteristics: 1. Volume: big data is characterized by more data than data from traditional methods, 2. Speed: Big data is generated faster than data from traditional methods, so it has rushed speeds due to active interaction with personal audiences, customers, and beneficiaries. 3. Diversity: big data is more diverse than traditional accounting data because it contains other data such as images, video, audio, and text. 4. Authenticity: refers to the reliability of the data because the receiver cares about the quality of the data. 5. Value: indicates that data contributes to making timely decisions(Younis, 2020).

Big Data on Financial Report

Quality is a set of characteristics that accounting information must possess to be useful in meeting user needs, such as understanding, reliability, relevance, relevance comparability, and, above all, association with information competence. (Herath & Albarqi, 2017) Make a difference in the user decisions of the report. The quality of accounting information is defined as the characteristics of accounting information contained in financial statements. These characteristics help assess the quality of accounting information, decision-making, and financial forecasting failure. The quality of accounting information is characterized by understanding, relevance, reliability, and comparability (Younis, 2020). Financial reports are the final

product of financial accounting and are of primary interest to management and stakeholders. However, company reports do not meet changing user needs over time. First, financial statements are still presented on a quarterly, semesterly, and yearly basis in the era of big data. Typically, a report is made publicly available after being audited at the end of the financial year, which implies that it may lose its relevance. Investors and other stakeholders need timely financial information, perhaps on a daily basis. In this case, one of the dimensions of big data is speed, which refers to the speed of processing and creating data; Big data systems are capable of processing and generating real-time data that can help companies publish their financial statements in a short period. It suggests that when companies adopt big data systems, it can significantly affect their ability to make financial information available to the public within the desired time frame. (Ibrahim, et.al., 2021)

In general, big data and its relationship to the quality of financial statements can be seen through the four dimensions of "Vs." (volume, speed, variety, and authenticity). Some data sources provide greater confidence in this data which is reflected in the quality of the information in the financial statements and allows companies to improve the information. As they give, here the emphasis emphasizes the role of business intelligence techniques in processing this data. Production in an organized and knowledgeable manner (Zragat, 2020). In terms of speed, what is meant by the rate of growth and production of data or the rate of data extraction, which is the time we take from the moment the data arrives until we make a decision based on the data. (Mauro, et.al., 2017) Speed is a key factor in making these data-driven decisions due to the "novelty" of the data decision-makers can collect and the ability to analyze data paths. It is critical in increasing the company's speed and enabling real-time action and decision-making during the day. The role of business intelligence technology has emerged with a significant increase in data frequency level, which is also due to the diversity of its sources. The need is becoming increasingly urgent for systems that guarantee high speed in real-time big data analysis or instantaneous convergence rates over time.

Big Data on the Role of Accountant

Big data significantly affects the role of accountants, as it creates opportunities for them to move into strategic roles in business organizations and helps accountants transform from decision-makers into business partners. (Younis, 2020) Finance and accounting professionals are increasingly implementing Big Data in their businesses, and many financial leaders expect significant changes in 2020 in business. Their accountants need to develop the skills necessary to keep pace with the technology and behavior of strategic business partners in organizations. Accounting programs should include experiential learning that develops information technology skills integrated with accounting. This educational experience includes skills in data creation, data management and analysis, data communication, data security, and storage. In addition, data analysis, information technology skills, and knowledge development should be important components of accounting programs. (Younis, 2020) (Janvrin & Watson, 2017)

Big data includes 1) Image and video data: Videos containing employee productivity tracking videos, inventory videos to measure productivity and identify bottlenecks, interviews in which management interviews are analyzed to extract content and emotions, and then provide non-verbal information about risks and the big picture of the business. This nonverbal component is more important than the verbal content, which creates a picture of management's intentions. 2) Audio data: Audio data analysis can provide quarterly benefits, such as quarterly conference calls, shareholder and board meetings, customer calls, and employees' internal phone calls. 3) Text data: including websites, Facebook, and Twitter. This data is useful for marketing support, providing early warning of product failures, estimating sales volume, and evaluating and improving business performance. Companies extract and combine big data formats from video, images, audio, and text with traditional financial data to promote accounting records, improve the quality of financial information, promote transparency, streamline decision-making, and respond to stakeholder requests. (Younis, 2020) Big data influenced the future of financial reporting and the evolution of GAAP, where Extensible Business Reporting Language (XBRL), originally XML (Extensible Markup Language), could be used. This language can process data automatically and is able to convert data into valuable information. A Base-Based Report (XBRL) is an electronic version of an enhanced financial statement that reduces data processing time, prepares environmentally friendly electronic financial statements, and

improves analysis. Analyzing financial information, publishing reports in multiple languages, and improving financial disclosures to help investors obtain accurate information. Big data analytics will provide real-time reporting in large companies, even small businesses trying to capitalize on the benefits of big data in accounting, such as Xero Company, which provides cloud computing accounting software for small businesses to help them take advantage of big data opportunities in accounting. (Warren, et.al., 2015)

Previous Research

The first study, titled "The Impact of Big Data Analytics on Improving Financial Reporting Quality," was created by Nagat Mohamed Marie Younis in 2020. In such research, business organizations benefit from big data analytics. The most important benefits among them are:

1. Helping to provide a comprehensive view of the economic unit,
2. Building the strategy and business model of the economic unit,
3. Creating a highly competitive advantage for formation,
4. Improving the quality of accounting information,
5. Providing relevant information that helps to rationalize decisions in economic units,
6. Determining past performance and future sources of information.

On the other hand, big data analytics faces several challenges, the most important of which are: lack of a workforce specializing in big data analysis, high cost of hiring experienced experts, speed of Bigdata data flow affects the rationalization of decision making, difficulty in transferring, storing, and processing big data, difficulty in presenting analytics related to big data. The study concluded that big data analysis improves the quality of accounting information, as it clearly affects the qualitative characteristics of accounting information, which positively affects the quality of financial statements (Younis, 2020).

The second study, "The Moderating Role of Business Intelligence in the Impact of Big Data on Financial Reports Quality in Jordanian Telecom Companies," was created by Omar Muhammad Zraqat In 2020. In this research business intelligence technology used in new technologies of the digital economy helps improve security and efficiency in the use of information, an important resource in the digital economy, where data related to business economic and financial activities can be recorded and stored more reliably, which accelerates the processing and verification of records when using business intelligence technology, where business intelligence contributes to processing data in quantity. Large and by monitoring the flow of accounting figures in real-time. Big data encourages the preparation of accounting reports in a stream of specially formatted data available soon through modern information technology, enabling all parties to work with this type of modern information technology. Big data technology automatically verifies important information in the form of financial (accounting) and non-financial statements. This will significantly reduce the cost and time it takes to prepare financial statements. Large volumes of data do not affect the quality of financial statements. This is likely due to the increasing amount of data collected due to the speed and variety of available resources, companies do not need to have it all for as long as they can access it, and therefore, large data flows can hinder the authors of financial statements, and thus have no effect on improving the quality of financial statements. It is difficult for companies to manage large amounts of data. (Zragat, 2020)

The third study, titled "Big Data Analytics in Financial Reporting and Accounting," was created by Kaya, I., Akbulut, D. H. In 2018 (Kaya & Akhbulut, 2018). In the study, the results of interviews with academics and accounting professionals produced the following findings: There have been so many changes in information and communication technology, and accountants need to keep up with the changes, complexities, costs, and risks associated with their implementation. For example, revenue recognition in many industries, including aviation and telecommunications, requires processing large amounts of data due to complex payment systems. In addition to managing the overall availability of information, its usefulness in decision-making, its integrity, quality, and confidentiality, the presentation of this information in the annual Audit financial statements is a major challenge for accountants. Furthermore, big data and analytics

present a pressing problem and, at the same time, are real opportunities for accountants working in forensic science and assessment.

There are many opportunities to connect traditionally expanded data, such as data found in ERP, with new data sources. The expanded ERP system adds to the usefulness of accounting records with BDA regarding the condition, character, and characteristics of the asset. Processing of big nontraditional data from various sources has a positive effect on the accuracy of financial reporting.

BDA solution providers play an important role in the implementation of BDA; Usually, they understand the needs of the business and offer solutions. Institutional pressure sometimes plays an important role in IT investment decisions. Some companies follow BDA policies and procedures adopted by other companies to try to ensure the legitimacy of their business and maintain and increase their competitive advantage. Academics and accounting professionals are trying to adapt to the challenges of BDA in using and mastering new technologies and applications. They realize that they need to improve their competence and skills in the field of big data analytics.

The fourth study entitled "The Convergence of Big Data and Accounting: Innovative Research Opportunities," was conducted by Ole Awad Elsayed Awad Ibrahim, Ph.D., Ahmed A, Elamer, Ph.D., Amr Nazieh Ezat, Ph.D. in 2021 (Ibrahim, et.al., 2021). In this study, the authors argue that big data can overcome the limitations of some data-dependent accounting techniques, such as financial reporting, performance measurement, and audit evidence. The study also argues that Big Data as a new technology will reshape accounting because data is at the heart of accounting. In addition, the author's discussion of the convergence between accounting and big data allows authors to suggest that big data users are more likely to provide measurable and high-quality financial statements and manage more effectively, provide more precise and complete audit evidence, and manage more. Risking. Efficiency, fewer budget gaps, and conducting business analysis more efficiently than those who don't use big data.

The fifth study, entitled "Big Data and Corporate Reporting: Impacts and Paradoxes," was made by Al-Htaybat, K., & Von Alberti-Alhtaybat, L. (2017). In this study, the author explained that accountants must engage with different parts of the organization and be proactive regarding big data and business reporting. Since they must provide large amounts of data to stakeholders and collect and analyze big data, accountants must engage with data scientists to achieve the most meaningful results. In addition, providing more organizational data and information can reduce information asymmetry, which can positively impact investor confidence in accounting practices and the business as a whole. A substantial additional empirical analysis is required on big data analysis that is currently or likely to be used in accounting in general and corporate reporting in particular, through case studies or detailed information and through quantitative surveys to gather broader information. Advice for research to be done in the future, as this is still a new area of research to be done.

METHODS

Data Types and Sources

This research is quantitative. According to Emzir (2009: 28) Quantitative methods are approaches that primarily use post-disaster theory in the development of knowledge (such as those related to cause and effect, reduction of variables, hypotheses and specific questions with measurement, observation, and testing theory), using research strategies such as surveying and statistical investigation experiments. The study used primary data. According to Husein Umar (2013) primary data can be interpreted as data obtained from primary sources, from individuals/individuals as a result of interviews, or obtained from the results of filling out questionnaires conducted by researchers. The primary data source is the respondent or direct subject of the research. So that researchers can immerse themselves in observing and writing down answers directly from the research subject. Key data is data that can be obtained in a variety of ways, such as questionnaires, face-to-face interviews, or surveys, so its existence is necessary to help solve the problem.

Research Models and Hypotheses

Research Objects are employees working in accounting in 2022 in Indonesia. This research is considered one of the applied research projects in solving field problems and developing work methods and productivity in the field of accounting. The study aims to identify the opinions and attitudes of big data analysis by 2022 through a shared quaternary to describe the impact of big data on financial reports.

Program Statistical Analysis Methods

SPSS 25 is used to analyze research data. Statistical tools used include descriptive statistical measures, such as arithmetic mean, standard deviation, repetition, and percentage. Internal consistency coefficient (Cronbach Alpha Coefficient) to check the stability of research tools. Pearson correlation coefficient for checking for multicollinearity. Multiple and progressive linear regression to test the influence of free variables on bound variables. And tiered regression analysis to test the influence of free variables on variables bound by the presence of censored variables (Zragat, 2020).

Reliability Test

The stability of the tool used to measure variables in the study was tested using the Cronbach alpha coefficient test, where the scale result is statistically accepted if the Cronbach alpha value is greater than (0.60), and close to the value (100%), indicating a higher level of stability of the research instrument (Zragat, 2020).

One Sample T Test

Certain average or not. A single sample test is used to compare the average of a sample with a specific value. Researchers can use the sample to compare the sample mean with the hypothetical population mean to see if the sample differs significantly. For example, sample tests are used to compare sample averages and sample midpoints of test variables and determine whether valid processes can generate observed patterns. A sample test assumes that the dependent variables are normally distributed in the population and that the data is independent. The procedures used to perform sample tests are the same as those used when conducting independent and dependent sample tests. Test samples can be calculated using formulas or statistical packages for social sciences (SPSS (Kaya & Akhbulut, 2018)).

ANALYSIS

Distribution of Research Samples

Table 1. Research Sample by Year of Experience and Breadth of Respondents' Need to Analyze Big Data

Work		Work Experience			The Level of Need to Analyze Big Data		
		Less than 5 Years	5 – 10 Years	More than 10 Years	Continuous	Irregular	Very Rare
Accountant	Sum	16	13	3	9	19	4
	%	50	40,6	9,4	28,1	59,4	12,5

Source: Author

Based on the data contained in Table 1, the number of respondents who have less than 5 years of work experience amounts to 16 people by 50%, work experience of 5 to 10 years amounts to 13 people. 40.6%, and over 10 years amounted to 3 people at 9.4%. As for the need to analyze data continuously amounting to 9 people by 28.1%, irregularly amounting to 19 people by 59.4%, and very rarely numbered 4 people by 12.5%.

Reliability Test

Table 2. Reliability Test

Cronbach's Alpha	N of Items
,425	10

Source: Author

Based on Table 2 the reliability test gets a Cronbach alpha value of 0.425 which means that the data obtained has a fairly reliable data reliability level because it is more than 0.40.

Normal Distribution Testing

Table 3. Kolmogorov Smirnov Normality Test

		Unstandardized Residual
N		32
Normal Parameters	Mean	,0000000
	Std. Deviation	1,72470505
Most Extreme Differences	Absolute	,114
	Positive	,077
	Negative	-,114
Test Statistic		,114
Asymp. Sig. (2-tailed)		,200 ^{c,d}

- a. Test distribution is Normal.
- b. Calculated from data.
- c. Lilliefors Significance Correction.
- d. This is a lower bound of the true significance.

Source: Author

In table 3 it is known that the value of Asymp Sig. (2-Tailed) of 0.200 which is greater than 0.05, therefore it can be concluded that the figure shows the data following the normal distribution.

Relative Importance of Variables

Table 4 presents the relative importance of respondents' opinions about the impact of big data analysis on the accounting information cauldron. Relative interests are calculated using formulas:

$$\text{Relative Important Index} = \frac{5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n_1}{A * N}$$

Table 4. Relative Importance of Respondents' Opinions On the Impact of Big Data Analysis on the Quality of Accounting Information

No	Element	Relative Importance
1	Big data analysis leads to the provision of relevance and objective and valuable information that helps in decision making on economic units.	86%
2	Big data analysis leads to increased understanding and analytics of information accounting content	90%
3	Big data analysis leads to an increased understanding of annual financial statements by providing detailed data about economic units through discussions, phone calls and videos, which improves reliability and quality. accounting information	88%
4	Big data analysis leads to an increased understanding of the different operating properties of economic units and improves understanding of the strategic performance of the economic unit.	84%
5	Big data analysis leads to improvements in predicting future profits and risks, which improves the reliability and quality of accounting information.	84%
6	Big data analysis leads to increased opportunities for future growth and improved predicts the future performance of economic units.	90%
7	Big data analysis leads to an increase in the company's performance assessment, which increases the level of trust of accounting information.	88%
8	Big data analysis leads to providing stakeholders with more information, which improves the quality of accounting information and then reduces information asymmetry.	87%
9	Big data analysis leads to increased comparability of information among sectors of economic units or between specific sectors and their partners in the market.	86%
10	Big data analysis leads to know the latest developments of the economic unit, which improves the quality of accounting information.	88%

Source: Author

From Table 4 in the opinion of accountants the most important element according to relative interest standards are:

1. Big data analysis leads to an increased understanding and analytics of information accounting content.
2. Big data analysis leads to increased opportunities for future growth and increased predicts the future performance of economic units.
3. Big data analysis leads to an increase in the performance assessment of the company, which increases the level of trust of accounting information.
4. Big data analysis leads to know the latest developments of the economic unit, which improves the quality of accounting information.

One Sample T Test

Table 5. Statistics One Sample

	N	Mean	Std. Deviation	Std. Error Mean
Z1	32	43,31	2,669	,472

Source: Author

The standard deviation reflects the average deviation of the data from the average. Standard deviation can describe a change in data, where if the standard deviation is greater than the mean, it means that the mean is a poor representation of the whole data. In table 5 the mean value reaches the number 43.31 with a standard deviation of 2,669. Since the mean value is greater than the standard deviation, this means that the acceptance rate of the study sample for all proposed variables is very high.

Table 6: One Sample Test to Compare Between Collective Questions and Common Mean of Answers

Test Value = 32

	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Z1	23,974	31	,000	11,313	10,35	12,27

Source: Author

Table 6 shows the SPSS Output Analysis obtained a Sig value. (2-tailed) of 0.000 which is smaller than 0.05, it can be concluded that H0 is rejected which means that big data analysis has an effect on improving the quality of financial statements. Table 6 also describes a positive t value with a value of 23.974, a confidence interval of a lower difference of 10.35, and a higher value of 12.37.

CONCLUSIONS

This research aims to find out about the impact of big data on the quality of baking reports in Indonesia in the opinion of accountants. The purpose of financial statements is to provide information about the company's financial position, operations and changes in financial position that are useful for those with an interest in making economic decisions. In the opinion of the respondent's big data analysis allows for increased understanding and analysis of information content, increases future growth opportunities, and improves the forecast of future performance of economic units. Based on the data obtained from respondents, it can be concluded that the use of big data can provide high-quality financial statements. Researchers suggest that including big data subjects in accounting education at universities. Big Data is one of the pressing challenges facing the accounting profession with many challenges such as rapid economic and financial changes, financial corruption, globalization, and ignorance with new developments in the IT field.

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