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The Role of Artificial Intelligence (AI) in Improving Audit Efficiency and Effectiveness

Ikhsan Hidayat[1*], Antong[2], Rahmawati[3]

[1]Faculty of Economics and Business, Universitas Muhammdiyah Palopo, 91922, Indonesia
[2]Faculty of Economics and Business, Universitas Muhammdiyah Palopo, 91922, Indonesia
[3]Faculty of Economics and Business, Universitas Muhammdiyah Palopo, 91922, Indonesia

Corresponding Author Email: ikhsanhidayat@student.umpalopo.ac.id

Abstract

The purpose of this study is to determine the role of artificial intelligence in improving the efficiency and effectiveness of audits. The independent variable in this study is Artificial intelligence and the dependent variable is the efficiency and effectiveness of the audit. The population in this study is auditors working at the Makassar Public Accounting Firm (KAP), as many as 39 people. The data used in this study is primary data and the analysis method used in this study is verifiative analysis. The results of this study show that the relationship between Artificial Intelligence and Audit Efficiency and Effectiveness has a positive and significant relationship. Based on the results obtained, this research is able to provide theoretical implications in scientific development, namely that this research can provide reference references for the field of auditing. Especially research related to artificial intelligence technology to increase audit efficiency and effectiveness and this research also provides practical implications for stakeholders for public accounting firms that can support auditors in increasing the use of artificial intelligence technology for more efficient and effective audit work.

Keywords: Artificial Intelligence; Efficiency; Effectiveness; Audit

1. Introduction

In the digital era of the 21st century, humans in general cannot be separated from technology. Technology can be used by humans to make it easier to complete tasks and jobs. The development of digital technology also has an impact on the development of accounting science and the accountant profession. Various groups are facilitated in accessing information through many ways and can enjoy the facilities of digital technology freely and under control [1] The use of information technology in accounting and the accounting profession is becoming increasingly important to ensure the reliability, relevance and accuracy of the data and results obtained

Big Data is a form of information technology development where Big Data is considered a good strategy to provide information. The presence of Big Data will be meaningless if analyzed manually. Detailed analysis of managing big data manually can take a very long time, accuracy is not guaranteed and the cost is not cheap considering the amount of data available is large and complicated. Big Data processing can be optimal if it is associated with a system. A system with complex technology It is called Artificial Intelligence (AI) [2]. Artificial intelligence is a branch of research in technology that allows machines to think intelligently in the same way that humans do. This artificial intelligence helps the audit process solve the difficulties and complexities faced in the form of large amounts of data that must be processed and the nature of data that is difficult to compile [3].

The emergence of high-tech machines such as artificial intelligence and storage media such as cloud computing and big data is a new thing for the public accounting profession

where information technology 4.0 is able to improve auditor performance. In addition, the use of information technology is claimed to help auditors reduce risks in data processing that is prone to errors such as those carried out by humans or the occurrence of human error. Lantip &; Rianto (2011) in [4]. Explaining that information technology is defined as a science in the field of computerized information and its development is very broad. Information technology systems can reduce misstatements by replacing manual procedures with programmatic controls that apply checking and balancing every transaction processed [5] Technology is not only changing the way auditors work, but also what they do. Environmental change requires auditors to be able to make predictions, especially by improving their skills.

Information technology that is used to improve individual performance as a member of a business organization, in general, will improve organizational performance. According to [6] The success of a company greatly affects the use of information technology, along with the maturation of information technology, allowing more accurate decisions. And company performance influences management decisions regarding reporting [7] Therefore, the most important thing that must be considered by an accounting firm in the application of information technology is the extent to which the success of the system has a positive impact on improving individual and organizational performance in general.

Some previous research results showed mixed results. Research (Wicaksana 2014) on measuring the use of audit information technology and its perceived usefulness found that the perception of usability and ease of use has a positive and significant influence on the audit performance of the use of information technology, thus influencing auditors in using information technology and influencing auditor behavior in using information technology. Further research was conducted. Regarding the impact of information system audit implementation on auditor performance with information technology as an intervening variable shows the influence of audit implementation. Information system audits of auditor performance show positive and significant results. While the indirect impact through information technology shows negative results on auditor performance for the first time. The purpose of this study is to determine the role of artificial intelligence in increasing audit efficiency and effectiveness.

2. Methodology

The research method used in this study is quantitative research. The population in this study is external auditors who work in KAP in Makassar City. The sampling method uses the purposive sampling method , which is a technique based on certain conditions. The requirements of respondents in this study are that the Auditor has applied artificial intelligence technology in the audit process.

Artificial intelligence in this study is related to artificial intelligence technology used in assisting the examination process such as using blockchain in the process of collecting data, reconciling, evaluating data and confirming audits. In addition, the use of artificial intelligence can be used in the form of drone technology to monitor items that can be accessed remotely or in the form of artificial intelligence that helps auditors connect clients and monitor in real-time.

The data used in this study are primary data. Data collection techniques in this study are using questionnaires. The research questionnaire was distributed to respondents through whatsapp media, and e-mail using the Likert scale which is a development of measurement instruments that have been used by researchers before.

The data analysis method carried out in this study using verifiative analysis is an analysis to prove and seek the truth of the hypothesis proposed. By using SmartPLS Program Version 3.2.9. The advantage of this method is that it requires no assumptions and can be estimated with a relatively small sample. Verifiative analysis consists of outer model analysis, inner model analysis and hypothesis testing [8]

In the outer model analysis , it is carried out to show that the measurement used is feasible to be used as a measure (Validity and Reliability). For validity testing using several test methods, including:

Convergent validity can be seen in the loading factor between the indicator score and the variable score with the provision of a correlation value above 0.05 to 0.60 [8] and the second test uses the Averange variance extracted (AVE) value which has good conditions if the AVE value of each construct has a value greater than 0.50 [8]. Discriminant validity is the value of the loading factor to find out whether the construct has adequate discrimination, which is above 0.70 for each variable by comparing the loading construct of one and another [8] For Reliability Test using several testing methods, namely, Cronbach's Alpha, in reliability testing reinforced with Cronbach's Alpha. A good value for construct is above 0.70 [8]. Composite reliability, data that has composite reliability above 0.7 shows that the reliability is high and has good reliability [8]

For inner model analysis it is used to show the strength of the estimation between latent variables and constructs. This analysis can be done in several stages, namely, Path coefficient is a path coefficient where the value will be generated from the latent construct [8]. R-Square is defined as some ability of all independent variables to explain variants and dependent variables using a value measure of 0.67 is strong, 0.33 is medium, and 0.19 is weak [8].

3. Result and Discussion

3.1. Result

Outer Model *analysis* is carried out to show the relationship between indicators and other variables.

1. Validity test
    a. Convergent validity

Based on Figure 2 below, it can be seen that the validity test results that each indicator for all variables has a loading factor value above 0.05 to 0.60, so it has a good loading factor value.

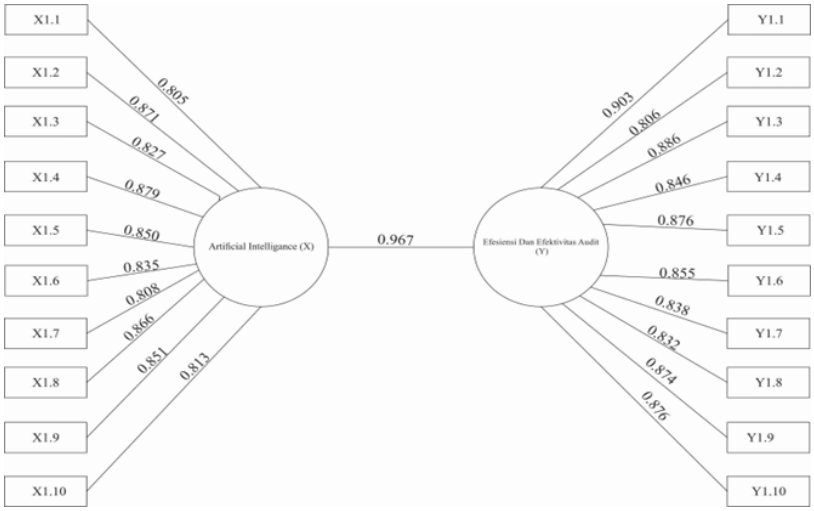

Figure 2 Loading Factor Value

b. Discriminant Validity

Knowing the results of the analysis of the test discriminant validity between Artificial intelligence against effectiveness and auditing efficiency is declared valid. Because in Table 1 below the values of the result of the discriminant test validity 0.841 and 0.860 means yielding a value > 0.70 on all variables used

Table 1 Results of Discriminant Validity Analysis

	Artificial Intelligance	Efesiensi dan Efektivitas Audit
Artificial Intelligance	0.841	
Efesiensi dan Efektivitas Audit	0.967	0.860

c. Average Variance Extracted (AVE)

Average Variance Extracted (AVE) Value On Table 2 it can be seen that the AVE value generated for each construction above 0.50. which means convergent validity there is no problem with the variable being studied. Audit efficiency and effectiveness of 0.739 and Artificial intelligence size of 0.707. It can then be understood that all variables have values greater than 0.50. According to the requirement, it can be concluded that there is no convergent validity problem on the model being tested.

Table 2 Results of Analysis Construct Reability and Validity

	Cronbach's Alpha	*rho_A*	*Composite Reability*	*Average Variance Extracted (AVE)*
Artificial Intelligance	0.954	0.954	0.960	0.707
Efesiensi dan Efektivitas Audit	0.961	0.961	0.966	0.739

2. Rehabilitation Test

In Table 2 you can also see the results of the rehabilitation tests that include Cronbach's Alpha, and Composite Reability. For Cronbachs Alpha, it shows a value above 0.70 and for the composite reability above 0.7 on all variables. That is where all the variables have a high rehabilitation.

Inner model testing is done to show the strength of estimation between the latent variable and the construction. There are several stages used to perform the internal model analysis as follows:

1. Path Coefficient

The known path coefficient value of table 3 is seen from the original number of the sample showing 0.967 on Artificial intelligence. Then the influence of the variable relationship on auditor performance is positive/directional. Also known are the results of the analysis of the probability/significance test in table 3 which shows variable has a p-value < 0.05 is 0,000 which means, the impact of the artificial intelligence variable on the effectiveness and effectivity of Audit is significant.

Table 3 Path Coefficient Analysis Results

	Original Sampel (O)	*Sampel Mean (M)*	*Standard Deviaton (STDEV)*	*T Statics (|O/STDV|)*	*P Values*
Artificial Intelligance -> Efesiensi dan efektivitas Audit	0.967	0.965	0.014	70.808	0.000

2. R-Square

The results of the R-Square analysis in Table 4 showed a value that meets the criteria because the result is 0.934, meaning strong. Then it can be concluded that the variable artificial intelligence is able to explain a strong relationship with the variables Efficiency and Audit Effectiveness.

Table 4 R-Square analysis results

	R-Square	*R-Square Adjusted*
Efesiensi dan Efektivitas Audit	0.934	0.933

Hypothesis testing has criteria if the t-statistic value is better than the t-table means that the hypothesis is accepted [8]. In this study with an alpha of 5% and a table t value of 5% was 1.96. Then the criterion for acceptance of the hypothesis is when the t-statistic is greater than the t-table**.** In table 5 we can see the value of t-statistic > 1.96. i.e. Artificial intelligence amounted to 70,808. Which means that the hypothesis is accepted. So it can be concluded that artificial intelligence has an effect in increasing the efficiency and effectiveness of audits. So that the hypothesis (H1) proposed is accepted.

Table 5 Path Coefficient Analysis Results

	Original Sampel (O)	*Sampel Mean (M)*	*Standard Deviaton (STDEV)*	*T Statics (|O/STDV|)*	*P Values*
Artificial Intelligance -> Efesiensi dan efektivitas Audit	0.967	0.965	0.014	70.808	0.000

3.2 Discussion

From the results of data processing that has been carried out, it can be seen that artificial intelligence has a positive and significant influence on the efficiency and effectiveness of audits which can be seen in the value of Path Coefficient, t-statistic, and p-value. It can be interpreted that these results are in accordance with the hypothesis where Artificial intelligence affects the Efficiency and Effectiveness of Audit and means that the hypothesis is accepted. This is in accordance with the results of research conducted by [9] where the results of the research say that auditors feel benefits when implementing information technology consisting of artificial intelligence with the benefit of being able to help analyze big data quickly and reduce errors. As well as cloud computing with the use of large storage and can adjust the needs and flexibility of data usage.

The benefits of using this technology can improve auditor performance results so as to improve the results of client financial statements that are more optimal. The research conducted by [10] where the results of the study show that the application of information technology represented by three independent variables, namely Skill and Knowledge, System Usage and perceived usefulness, has a positive and significant influence on auditor performance. The research conducted by [11] where the results of the study say that perceived usefulness and perceived ease of use do not have a significant effect on auditor performance.

The results of this study are also in line with the theory used, namely the Technology Acceptance Model (TAM) where TAM believes that the use of information technology will improve the performance of individuals or companies, besides that the use of information technology is easy and does not require hard effort from the user. The existence of artificial intelligence technology can improve auditor performance results both in terms of audit efficiency and effectiveness. In examining or auditing the client's financial statements. Customized technology is able to analyze big data, and help minimize time use quickly to reduce errors with high-tech systems such as artificial intelligence.

The use of Artificial intelligence Technology in improving audit efficiency and effectiveness, Auditors feel the benefits of using this technology in terms of efficiency, Artificial intelligence technology can help Auditors to automate routine tasks in auditing, such as data collection and processing, compliance testing, and information validation. This reduces the time required for administrative tasks and leads to improved overall efficiency, Artificial intelligence can also detect anomalies in data, such as unexpected increases in orders in a particular region, unusually high cost items posted by individuals, or highly favorable equipment leasing conditions for suppliers [12] Artificial intelligence can be used to make predictions related to financial risks, business trends, or economic conditions. This

gives auditors a better understanding of the factors that can affect the sustainability of the company.

4. Conclusion

Based on the results of the tests in this study it can be concluded that the role of Artificial Intelligence has a positive and significant influence in improving the efficiency and effectiveness of audits. Thus, from the responses generated on the questionnaires that have been distributed indicate that the auditor has applied artificial intelligence technology well.

Based on the results obtained, this study is able to give theoretical implications in the development of science. This research can provide a reference reference to the field of auditing, especially research related to artificial intelligence technology to enhance auditing efficiency and effectiveness. Besides, this research also provides practical implications for stakeholders, among others, for the public accounting office that can support the auditor by increasing the use of Artificial Intelligence technology for more efficient and effective auditing work.

This research recommends that it can be continued by adding other variables that have not been used as research variables in this study. Variables that could be added for further research such as Big Data analysis, Real-time Risk Monitoring, and Blockchain Technology use as independent variables. For data collection methods it is best not only through the dissemination of questionnaires can also conduct interviews and observations. The addition of data capture methods is expected to be able to obtain more accurate results and reflect the actual conditions.

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