The Impact of Artificial Intelligence and Big Data Technologies on the Profession of Accounting Educators

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Abstract.

This research investigates the impact of Artificial Intelligence (AI) and Big Data technologies on the accounting profession, explicitly focusing on accountants who serve as educators. The rapid development of AI and Big Data technology has changed teaching approaches and curricula in accounting education.. The research methodology involves surveys and interviews with accounting educators affiliated with the Indonesian Institute of Accountants, specifically within the Educator Accountants Department, from various higher education institutions in Indonesia. Data obtained from these interviews are qualitatively analyzed to identify their perspectives on the impact of AI and Big Data technologies in the context of teaching and accounting practices. The findings reveal that accounting educators widely recognize the importance of integrating AI and Big Data concepts into accounting curricula. This research provides valuable insights for educators to be able to design responsive curricula and equip students with the skills necessary to succeed in an increasingly interconnected and digitally transformed work environment.

Keywords: Artificial Intelligence (AI), Big Data technologies, Accounting profession, Educator accountants, Teaching approaches.

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1. Introduction

Entering the era of Industry 4.0, the integration of Cyber Physical Systems (CPS) and the Internet of Things and Services (IoT and IoS) into industrial processes has merged information technology with cyber technology. Technological industries have worked diligently to create tools that assist and simplify human tasks and work. This includes fields such as accounting, where artificial intelligence, machine learning, and deep learning have been integrated into various sophisticated accounting software to aid accountants in efficiency and effectiveness. Some of these accounting software include Krishand, Accurate V3 Standard, Sage ACCPAC ERP, MYOB, and DacEasy Accounting (DEA). Artificial intelligence, such as machine learning and deep learning, can process a large amount of work in a very short time through exponential increases in computer processing capabilities. In the context of accounting, artificial intelligence enhances the analysis and utilization of accounting data by enabling faster high-level analysis, and the results can be used to support management strategies or other initiatives. This concept is also in line with the views of (Sripan, M., & Wisaeng, K., 2022), which concludes with a positive perception of knowledge, attitudes, and skills toward digital media. The acquisition of basic knowledge in digital technology demonstrates the alignment of universities with technological advancements in study programs and job opportunities for future professionals. (Dolce, V., Emanuel, F., Cisi, M, et al, 2020).

In the realm of accounting, the application of artificial intelligence (AI) is a tool utilized by accountants to support and enhance work efficiency. Within the scope of business enterprises, AI plays a role in simplifying complex business processes to become more effective and efficient through sophisticated algorithms. The presence of artificial intelligence enables early detection of suspicious transactions, fraud, or errors, and helps identify and rectify them before problems occur. AI is also capable of performing cognitive tasks such as thinking, understanding, learning, problem-solving, and decision-making, in line with the concept proposed (Mui Kim Chu, Kevin Ow Yong, 2021). Using AI in accounting information and management systems in the financial sector strengthens organizational efforts in designing more optimal strategies. With good information presentation, managerial decisions can be made accurately and efficiently, ultimately improving company performance. (Chowdhury, P. N et al., 2022). Additionally, as stated (Roy-Ivar Andreassen, 2020), digital technology plays a role in directing management accountants towards a more specialized role in providing financial and non-financial information used in decision-making processes. Furthermore, the use of big data has also been shown to enhance management accountants' decision-making capabilities.

Digitalization is changing the way business processes are conducted, with digital tools altering management mechanisms and expanding virtual management involvement. Digitalization also changes views on organizational behavior in accounting personnel, requiring adjustments to competency requirements and expanding understanding of the application of professional ethics (Jackson, D et al, 2022). (Chyzhevska, L et al, 2021). It is stated that accountants for digitalization changes must have good competencies if they possess professional knowledge, professional ethics, operational skills, managerial skills, and adaptation abilities in the digital era to strengthen the quality of financial reports produced. This also impacts the concept of organizational behavior in the accounting field, requiring adjustments to competency requirements and a broader understanding of the application of professional ethics. Mastery of competencies covering knowledge, attitudes, and skills in a balanced manner will enable individuals to be competent and demonstrate optimal performance as a result of competency achievement. In efforts to achieve comprehensive competencies, the curriculum becomes the starting point in developing competencies, which also serves as a guide in accounting curricula as it contains core materials needed to achieve accounting education goals. Student learning outcomes in education heavily depend on the scope and focus of the curriculum used in accounting education. There is a need for alignment between the curriculum applied at universities and the amount of practice to enhance student competencies (Do, D. T., Nguyen, T. H, et al, 2013).

2. Literature Review

2.1. The Impact of AI on the Accounting Profession

Currently, advanced technology has been developed to perform human tasks with higher speed and accuracy. Entering the era of Industry 4.0, where Cyber-Physical Systems (CPS) and Internet of Things and Services (IoT and IoS) are integrated into industrial processes such as manufacturing, logistics, billing, and other processes (Kagermann, H, et al, 2013). merging information technology with cyber technology. The technology industry has made great efforts to develop tools that can assist and simplify human life and support them in completing their tasks and jobs. Overall, the influence of AI on the field of accounting is a fundamental change in the way financial information is processed, analyzed, and reported. This provides significant opportunities to improve efficiency, accuracy, and value-added in accounting practices, but also demands a deep understanding of technology and its implications for the accounting profession. This is in line with the rapid advancement in computer-based information technology has

brought Artificial Intelligence to a stage of rapid development. This development has resulted in many changes in human life, including advances in Artificial Intelligence. Organizations are increasingly considering or using AI in accounting and management information systems, attracting greater attention from the media, academic research, and industries each year (Lee & Scheepers, et al, 2023).

In the realm of accounting, artificial intelligence has been integrated into various sophisticated accounting software to assist accountants and auditors in their work. Through the presence of artificial intelligence, accountants and auditors can complete tasks more easily and quickly. Additionally, in the context of compliance, artificial intelligence can provide reliable data to accountants, accelerate the report-making process, and ultimately enhance efficiency. In terms of data classification, artificial intelligence bots can filter information and place it in the appropriate accounts based on an understanding of categorical differences. Machines integrated with artificial intelligence are beginning to learn to make better decisions based on human input, even capable of adapting to accountants' behavioral patterns. Furthermore, for fraud prevention, artificial intelligence has been used by companies to identify patterns of unusual data or numbers. Moreover, AI can analyze text and identify differences to uncover cases of fraud and deception. With this approach, insurance companies, banks, and other sectors can more easily detect indications of fraud and avoid losses caused by fraud. From this description, we can conclude that the role of artificial intelligence in the accounting world has become very significant. Artificial Intelligence (AI) has transformed the accounting landscape by automating various tasks, increasing efficiency, and reducing the risk of human error. The presence of Artificial Intelligence (AI) in the accounting world has revolutionized by automating tasks, improving efficiency, and reducing the risk of human error (Mishra, S., Ewing, M. T., & Cooper, H. B., 2022). Although providing advantages such as cost savings, speed, and accuracy, AI also challenges the accounting profession with the potential replacement of human functions by automated systems (Mohd Faizal, S., Jaffar, N., & Mohd nor, A. S., 2022). AI technology, including machine learning and deep learning, is used to enhance decision-making processes and address complex challenges, demonstrating the transformative impact of AI across various sectors. (Lee, C. S., & Tajudeen, F. P., 2020).

2.2. Big Data's Impact on the Auditor Profession

Big data and data analytics have become a major focus among academics and industries, marking the entry into the data-driven era. This development is also reflected in the accounting industry, where big data has become a popular topic. Therefore, it is anticipated that big data and data analytics will have a significant

impact on the field of accounting and the practice of the accounting profession. It is hoped that the utilization of big data will enhance the quality of accounting information, while the accounting profession will continue to produce dynamic and real-time information to support decision-making (Siriyama Kanthi Herath, 2021). Big data contributes valuable insights in the context of audit within the accounting field. It benefits auditors by enhancing the quality of audit evidence and facilitating fraud detection. One highly useful potential application of big data is its ability to provide population-based audits, where the results are expected to yield more relevant audit evidence (Jia, Z., 2020). Furthermore, big data can enhance overall efficiency in data analysis, including descriptive, diagnostic, predictive, and prescriptive analyses. Developments in computing power, especially through cloud computing and storage, play a key role in driving the big data phenomenon. This enables the capability to capture, store, share, and process data efficiently, regardless of its volume or complexity. With the abundance of available data, various models, programs, and technologies are utilized to unearth insights instantly. By harnessing big data and analytics, professionals in the accounting field have transformed their approach from conventional methods of data collection, analysis, and storage to leveraging large volumes of data generated and analyzed by technology (John McCarthy, 2007).

The utilization of Big Data involves the use of automation and artificial intelligence to evaluate larger volumes of data at higher speeds, enhancing auditors' understanding of historical violations, current policy changes, as well as potential risks and fraud (Atanasovski, A., et al, 2020). The integration of Big Data and auditing involves the potential of Big Data technology to improve audit quality, efficiency, and risk assessment. By harnessing Big Data analytics, auditors can identify anomalies, patterns, and trends in financial data, enabling a more comprehensive evaluation of financial reports (Cao, M., Chychyla, R., & Stewart, T., 2015). However, some studies indicate that perceptions of the usefulness and ease of use of Big Data analytics have a direct impact on audit quality (Al-Ateeq, B, et al, 2022). The use of Big Data analytics has also been shown to moderate the relationship between perceptions of usefulness and audit quality (Al-Ateeq, B, et al, 2022).

This analysis can provide statistical summaries of the entire population, furnish audit evidence on a larger and more comprehensive scale, strengthen the connection between financial reports and actual business operations, and identify potential warning signs. Internal audits can also harness big data by utilizing more unstructured and non-financial information to manage risks. Integrating current big data into future audits will require further consideration. This statement aligns with findings (Naysary, B., Dhoraisingam, S., Siew, et al, 2022), stating that big data has proven to enhance decision-making processes and prediction accuracy. Additionally (Li, W., 2021), efficient data analysis tools

enable a deeper understanding of data and facilitate companies in analyzing and utilizing data in real time for decision-making processes. Data analysis has a significant impact on auditor evaluations, particularly in assessing audit risks. These findings are supported by arguments put forth (Maria L. Murphy, and Ken Tysiac, 2015). (Krieger, F., Drews, P., & Velte, P. , 2021) which demonstrates that the use of data analysis can assist auditors in focusing on high-risk client data to reduce audit risks. The value demonstrates the significance and utilization of big data in positively enhancing organizational performance. Through big data analysis, valuable business information can be obtained to improve decision-making processes (Churakova, E. N., 2022). According to the research conducted by (Y Sutisnawati, 2019), it was concluded that the utilization of Big Data has a positive impact on enhancing customer experience and improving decision-making processes. (Olih Solihin, 2021) also stated that Big Data serves as a crucial source of information in accelerating the implementation of government programs. In the continuously evolving technological era, the presence of social media has become an inseparable part of various human activities, including business, education, and other endeavors.

2.3. Machine Learning's Impact on the Accounting Profession

The application of Machine Learning (ML) to the accounting profession has significant implications. ML enables accountants to automate repetitive and time-consuming processes such as data analysis, transaction recording, and financial report generation. Additionally, ML also aids in analyzing complex patterns in financial data that can be used to make more accurate predictions and forecasts. Thus, ML enables accountants to focus on more strategic and value-added tasks, such as providing more meaningful financial advice to clients or management based on the data analysis results obtained from ML. Furthermore, ML can also be used in the auditing process to detect potential fraud or errors in financial reports more efficiently and effectively. Overall, ML brings about significant changes in how accountants work and provides opportunities to enhance efficiency, accuracy, and value-added in accounting practices. The use of machine learning in the accounting profession not only allows accountants to work more efficiently but also enhances their ability to manage business risks, analyze data, and review source documents more effectively. This provides significant added value to accounting practitioners and companies in their efforts to achieve business goals and compliance (Atanasovski, A., 2015). Furthermore, integrating machine learning into accounting practices not only makes bookkeeping tasks easier and more efficient for accountants but also helps them focus on more strategic and value-added tasks. This results in significant time and energy savings, as well as improving the quality of analysis and decision-making in business activities.

Companies can reduce costs and improve productivity by implementing comprehensive smart automation strategies (My, T, 2022). The utilization of AI, such as Optical Character Recognition (OCR) and Machine Learning (ML), not only enhances accuracy in decision-making but also triggers fundamental changes in accounting and auditing practices. Despite challenges, including ethical and social implications, the integration of AI in the accounting sector has shown significant impact (Fulop, M. T., 2013). In management accounting practices, ML can assist in transaction classification with control function scopes, such as in Financial Planning & Analysis (FP&A). The use of ML technology applications enables the prediction of transaction classifications based on historical transaction analysis. However, the quality of predictions depends on the quality and bias inherent in the dataset used (Nurul Afza Khusaini Mat Hussin's, 2024).

Artificial Intelligence assists in forecasting accurate financial reports. With Machine Learning (ML), financial professionals can predict future trends based on historical data/records (Alqtamin, R. M., 2018). Technological advancements in this era have transformed financial handling methods. This technology has made significant progress by reducing costs, enhancing customer experiences, and increasing revenue by saving many organizations from potential losses and taking corrective actions whenever necessary. ML has now evolved further into deep learning, thereby improving the quality of information and saving costs (Hashem, F., & Alqatamin, R. (2021). Such software provides chatbots on cloud accounting platforms for small businesses, assisting in answering customer queries regarding the latest financial data, and providing information on amounts to be paid, account balances, liabilities to be paid, and more (Hashem, F., & Alqatamin, R, 2021). (I B S Nusa, F M Faisal, 2020) Information Technology infrastructure plays a crucial role in supporting the implementation and operationalization of Machine Learning solutions, ensuring that the necessary computing resources, data storage, networking, and security are available to run models and apply the results of machine learning into production environments.

3. Methodology

From the perspective of the objectives, this research utilizes a survey method by collecting information from respondents as a data source, thus enabling the exposition, comparison, and explanation of facts related to individuals, events, or specific situations. With a survey approach, researchers not only gain an overview of the observed phenomenon but also elucidate the relationship between variables, test hypotheses, make predictions, and formulate the meanings and implications of the researched issue. This study provides an

overview of phenomena related to variables and surveys accounting educators who are members of the Indonesian Association of Accounting Educators, with a total of 100 respondents. The research focus is to explore the importance of integrating artificial intelligence, machine learning, and deep learning in the accounting curriculum at accounting education institutions by explaining the characteristics of the aforementioned variables. Additionally, another objective is to identify and review various findings from empirical research related to the importance of integrating such technology into the accounting curriculum at accounting education institutions.

The results of this research are then synthesized to obtain a comprehensive overview. In terms of research type, this study can also be categorized as verificative and explanatory research, or cause-and-effect study, as it aims to explore factors influencing a variable and test hypotheses. Data analysis in this research includes descriptive analysis, which aims to provide descriptions of the characteristics of each research variable, and verificative analysis, which aims to determine the relationships between variables through hypothesis testing using the Structural Equation Model (SEM) method with a Partial Least Squares (PLS) approach.

4. Findings

4.1. Artificial Intelligence And The Accounting Profession

In Table 1, it explains the relationship between latent variables and their indicators. In the context of artificial intelligence, OMV can be used to describe indirectly observable factors that influence the behavior of artificial intelligence systems.

Table 1 *Outer Model* Variabel Artificial Intelligence

Variabel Manifes	***Loading Factor***	***Measurement Model***	t-value
Thinking rationally *($X_{1.1}$)*	0,916	X_{11} = 0,916 X_1 + 0,161	33,771
Thinking humanly *($X_{1.2}$)*	0,890	X_{12} = 0,890 X_1 + 0,208	27,915
Acting humanly *($X_{1.3}$)*	0,789	X_{12} = 0,789 X_1 + 0,265	25,721

Source: *Output* SEM PLS

The Outer Model analysis of the Artificial Intelligence variable shows strong results in measuring different dimensions of AI. Here is the analysis:1. Thinking Rationally (X1.1) - Loading: 0.916 - Measurement Model: X11 = 6 X1 + 0.161 - T-value: 33.771.Interpretation: This variable has a high loading (0.916), indicating that it strongly represents the "Thinking Rationally"

dimension in the context of AI. The high t-value (33.771) also confirms the statistical significance of the relationship between the latent variable and the indicator variable. Thinking Humanly (X1.2), Loading: 0.890 Measurement Model: X12 = 0.890 X1 + 0.208 T-value: 27.915 Interpretation: This variable also has a high loading (0.890), indicating that it strongly represents the "Thinking Humanly" dimension in the context of AI. The significant T-value (27.915) indicates that the relationship between the latent variable and the indicator variable is statistically significant. Acting Humanly (X1.3) Loading: 0.789 Measurement Model: X12 = 0.789 X1 + 0.265, T-value: 25.721 Interpretation: This variable has a slightly lower loading (0.789) compared to the previous two variables but still shows a strong relationship with the "Acting Humanly" dimension in the context of AI. The high T-value (25.721) indicates that this relationship is statistically significant.

Overall, the results of the Outer Model analysis indicate that all three manifest variables used to measure the dimensions of Artificial Intelligence (Thinking Rationally, Thinking Humanly, and Acting Humanly) have high and statistically significant loadings. This indicates that the Artificial Intelligence construct has been well measured through these variables and can be used in further analysis to understand the relationships between these AI dimensions.

Table 2 explains the R-square, which is used by regression analysis to evaluate how well the regression model fits the observed data. R-square provides an indication of how much variation in the Artificial Intelligence (AI) variable can be explained by the accounting profession variable.

Table 2 R-square value

Relationship between variables	λ	T-Statistic	R square
Artificial Intelligence (AI) (X) -> Accounting profession (Y)	0,699	7,468	0,49,5

** significant at the 0.05 level of significance, t_{tABLE} = 1,96
Source: *Output* SEM PLS

Based on the statistical analysis of the relationship between Artificial Intelligence (AI) and the accounting profession, the results are as follows: Lambda (λ) Value: 0.699 Interpretation: Lambda (λ) is the standardized regression coefficient in path analysis models. A high lambda value (0.699) indicates a positive and significant relationship between the Artificial Intelligence variable (X) and the accounting profession (Y). T-Statistic Value: 7.468 The T-Statistic measures the statistical significance of the regression coefficient. A high t-statistic value (7.468) indicates that the relationship between

Artificial Intelligence (X) and the accounting profession (Y) is statistically significant. R Square (R^2) Value: 0.495 Interpretation: R Square (R^2) indicates the proportion of variability in the dependent variable (Y) that can be explained by the independent variable (X). In this context, an R Square value of 0.495 suggests that Artificial Intelligence (X) explains about 49.5% of the variability in the accounting profession (Y). This indicates that Artificial Intelligence has a significant impact on the accounting profession, but there are still other factors beyond AI that also influence the accounting profession. Overall, the statistical results indicate that Artificial Intelligence has a significant positive relationship with the accounting profession. This suggests that as AI technology advances, its impact on the development of the accounting profession becomes more significant. However, it is important to note that there are still other factors contributing to changes in the accounting profession.

The use of Artificial Intelligence (AI) in the accounting education profession has several significant positive impacts: 1. Increased Teaching Efficiency: AI can be utilized in adaptive learning, where the system can adjust the material and difficulty level based on the abilities and needs of individual students. This helps improve teaching efficiency by ensuring that each student receives a tailored learning approach, aiding them in better understanding accounting concepts.2. More Relevant Curriculum: By using AI to analyze industry trends and labor market needs, accounting education institutions can tailor their curriculum to include the latest skills and knowledge required by accounting professionals. This helps ensure that graduates have relevant and up-to-date skills to enter the job market.3. Development of More Interactive Learning Materials: AI can be used to create more interactive learning materials, such as using chatbots to provide assistance and answers to students' questions, or leveraging augmented reality (AR) and virtual reality (VR) technology to bring accounting concepts to life.4. Deeper Data Analysis: With AI's ability to analyze data quickly and accurately, accounting educators can use this technology to provide deeper insights into trends and patterns in financial data, helping students better understand financial analysis and data interpretation.5. Project-Based Learning: AI can support project-based learning approaches by providing tools and platforms to explore real business cases and solve practical financial challenges. This allows students to develop analytical and problem-solving skills crucial in the accounting profession. By integrating AI technology into accounting education, accounting educators can better prepare students to face the challenges and opportunities in the ever-changing business world. This helps ensure that graduates have relevant skills and knowledge and are ready to succeed in their careers.

Table 3, path analysis, path coefficients, and t-values are used together to

understand the relationship between Artificial Intelligence, big data, and Machine Learning in the accounting profession and to assess the strength and significance of these relationships. Path coefficients provide information about the direction and strength of the relationships, while t-values provide information about their statistical significance.

Table 3 Path coefficient and T-value

Exogenous à endogenous variables	***Path Coefficient***	**t-*value***
Artificial Intelligence (AI) (X) -> Accounting profession (Y)	0,703	5,907
Big Data (X_2) -> accounting profession (Y)	0,356	2,266
Machine Learning (X_3) -> accounting profession (Y)	0,398	2,821

(Source: Smart PLS Output)

Based on the statistical analysis of the path coefficient and t-value of the relationship between exogenous and endogenous variables in the model, the following interpretations are made: Artificial Intelligence (AI) -> Accounting Profession Path Coefficient: 0.703 t-value: 5.907. The significant path coefficient (0.703) indicates that Artificial Intelligence has a positive and significant impact on the accounting profession. The high t-value (5.907) suggests that this relationship is statistically significant, indicating that AI has a strong influence on the accounting profession. Big Data -> Accounting Profession Path Coefficient: 0.356 t-value: 2.266. The path coefficient (0.356) suggests that Big Data also has a positive impact on the accounting profession, although its impact is not as strong as Artificial Intelligence. The t-value (2.266) indicates that this relationship is also statistically significant, although lower than the relationship between AI and the accounting profession. Machine Learning -> Accounting Profession Path Coefficient: 0.398 t-value: 2.821 The path coefficient (0.398) indicates that Machine Learning also has a positive impact on the accounting profession. Although its impact is slightly stronger than Big Data, it is still lower compared to Artificial Intelligence. The t-value (2.821) indicates that this relationship is also statistically significant.

The significance of the statistical results indicating that the path coefficient and t-value for Artificial Intelligence (AI) are greater than those for Big Data and Machine Learning in their relationship with the accounting profession is as follows: Artificial Intelligence (AI) has a more significant impact A larger path coefficient indicates that changes in the AI variable have a greater impact on the endogenous variable (accounting profession) compared to Big Data and Machine Learning. This suggests that AI may have a more direct or stronger connection to certain aspects of the accounting profession than Big Data or Machine Learning. Since the t-value for AI is larger, it indicates that the

relationship between AI and the accounting profession is more statistically significant. This could mean that AI may be more relevant or integrate more aspects of the accounting profession than Big Data or Machine Learning, resulting in a greater impact. AI may have broader usage or application: The possibility that AI has a larger path coefficient and t-value may also indicate that AI has broader usage or application in the context of the accounting profession compared to Big Data or Machine Learning. This could include various AI applications in data analysis, process automation, or more sophisticated decision-making. Advanced AI development: Advances in AI technology have made it a more dominant factor in the transformation of the accounting profession compared to Big Data or Machine Learning. This may reflect the higher level of complexity or capability of AI in processing data, learning from patterns, and generating valuable insights for accountants. Overall, the differences in path coefficient and t-value between AI, Big Data, and Machine Learning suggest that AI may have a more significant and impactful role in the development of the accounting profession at present. However, it's important to remember that all three factors still contribute positively to the evolution of the accounting profession, albeit at different levels of impact.

Table 4 Linear regression equations are used to model the linear relationship between the accounting profession variable and Artificial Intelligence, big data, and Machine Learning.

Table 4 The Equations of Big Data and Machine Learning on Artificial Intelligence

Endogenous Constructs	**Exogenous Constructs**			***Error variance***
		BD	**ML**	
AI (Y)	Path coefficient: t_{value}	0,498 (2,821)	0,356 (2,266)	0,19,7

(Source: Smart PLS Output Attachment)

The statistical analysis of the provided table is as follows: Equation of Big Data on Artificial Intelligence (AI): Path Coefficient: 0.498, t-value: 2.821, Error Variance: 0.19, Equation of Machine Learning on Artificial Intelligence (AI): Path Coefficient: 0.356, t-value: 2.266, Error Variance: 0.7 Path Coefficient: The path coefficient indicates the magnitude of the impact of exogenous variables (Big Data and Machine Learning) on the endogenous variable (Artificial Intelligence). In this case, Big Data has a larger path coefficient (0.498) compared to Machine Learning (0.356). This suggests that the contribution of Big Data to AI is greater than the contribution of Machine Learning. t-value: The t-value is used to assess the statistical significance of the relationship between variables. In both equations, the t-value (2.821 for Big Data

and 2.266 for Machine Learning) indicates that both relationships are statistically significant, as they exceed the commonly used significance threshold (e.g., 1.96 for $\alpha = 0.05$).Error Variance: Error variance reflects how well the model describes the variation unexplained by the independent variables. A lower error variance indicates a better model. In this case, the error variance for Big Data is 0.19 and for Machine Learning is 0.7. This indicates that the model for Big Data is better at explaining the variation unexplained by the independent variables compared to Machine Learning. Overall, the statistical results indicate that both exogenous factors, Big Data, and Machine Learning, have a statistically significant impact on Artificial Intelligence. However, the contribution of Big Data to AI appears to be greater than the contribution of Machine Learning, although both are significant in the model.

Table 5 Big Data Partial Test aims to identify the most influential factors and improve their strategies to enhance the performance of accounting and internal auditing.

Table 5 Big Data Partial Test On The Accounting Profession

Relationship between variables	Λ	T-Statistic	Conclusion
Big Data (X_1) -> accounting profession (Y)	0,356	2,228	Significance

The statistical analysis of the given table is as follows: Lambda (Λ) - Value: 0.356 Lambda (Λ) is the standard regression coefficient in path analysis models. This value indicates the extent of the influence of the exogenous variable (Big Data) on the endogenous variable (accounting profession). In this case, the lambda value of 0.356 indicates a positive influence between Big Data and the accounting profession. T-Statistic: Value: 2.228 Interpretation: The T-Statistic measures the statistical significance of the regression coefficient. A significant t-statistic value (2.228) indicates that the relationship between Big Data and the accounting profession is statistically significant. Based on the statistical results provided, it can be concluded that Big Data has a significant influence on the accounting profession. The significant Lambda value (0.356) and the t-value exceeding the significance threshold (2.228) indicate that the use of Big Data has a tangible and positive impact on the practice and development of the accounting profession. Additionally, a Lambda value greater than zero indicates that the relationship between Big Data and the accounting profession is positive, meaning that the greater the use of Big Data, the more significant its impact on the accounting profession. Therefore, these results can be used to support the development and implementation of Big Data strategies in accounting practices to enhance the efficiency, accuracy, and relevance of financial information.

Table 6 Machine Learning Partial Test aims to identify the most

influential factors and improve their strategies to enhance the accounting profession.

Table 6 Machine Learning Partial Test On The Accounting Profession

Relationship between variables	Λ	T-Statistic	Conclusion
Machine Learning (X_2) -> accounting profession (Y)	0,478	2,762	Significance

The statistical analysis of the given table is as follows: Lambda (Λ) - Value: 0.478 Lambda (Λ) is the standard regression coefficient in path analysis models. This value indicates the extent of the influence of the exogenous variable (Machine Learning) on the endogenous variable (accounting profession). In this case, the lambda value of 0.478 indicates a positive influence between Machine Learning and the accounting profession. T-Statistic Value: 2.762 The T-Statistic measures the statistical significance of the regression coefficient. A significant t-statistic value (2.762) indicates that the relationship between Machine Learning and the accounting profession is statistically significant. Based on the statistical results provided, it can be concluded that Machine Learning has a significant influence on the accounting profession. The significant Lambda value (0.478) and the t-value exceeding the significance threshold (2.762) indicate that the use of Machine Learning has a tangible and positive impact on the practice and development of the accounting profession. Additionally, a Lambda value greater than zero indicates that the relationship between Machine Learning and the accounting profession is positive, meaning that the greater the use of Machine Learning, the more significant its impact on the accounting profession. Therefore, these results can be used to support the development and implementation of Machine Learning strategies in accounting practices to enhance the efficiency, accuracy, and relevance of financial information.

Table 7 shows that each element of big data provides insights into the relationship between big data variables and the accounting profession involved in statistical analysis, and how these variables mutually influence each other.

Table 7 The Big Influence of l Big Data On The Accounting Profession

Variable	Direct Influence Path	Coefficient	Total		
	(R)	(R^2)	X_1	X_2	
X_1	ρ_{yx2}	$(\rho_{yx2})^2$	$\rho_{yx2}. r_{x2x1}. \rho_{yx1}$	$\rho_{yx1}. r_{x1x3}. \rho_{yx3}$	
	0,356	0,356 x 0,356	0,356 x 0,236 x 0,398	0,398 x 0,144 x 0,199	
		0,127	0,133	0,011	0,324

Source: Output SEM PLS

Based on the research analysis of the significant influence of Big Data on the accounting profession: Big Data has a direct influence coefficient (ρyx2) of 0.356. This indicates the direct influence of this variable on other variables in the model. The R^2 coefficient (0.356 x 0.356) indicates that variable X1 explains about 35.6% of the variation in other variables in the model. Variable X_1 also has a direct path coefficient (ρyx2 . rx2x1 . ρyx1) of 0.127, while variable X_3 has a direct path coefficient (ρyx1 . rx1x3 . ρyx3) of 0.324. This indicates the extent to which variables X_1 and X_3 are influenced by other variables in the model. Thus, the research results indicate that Big Data has a significant influence on the accounting profession, with variable X1 playing an important role in explaining the variation in other variables in the model.

The role of Big Data in accounting education is crucial as it can influence how accounting educators teach and provide deeper insights to students about the evolving accounting world. Here are some roles of Big Data in the context of accounting education: 1. Enhancing Curriculum: Big Data can be used by accounting educators to identify the latest trends and developments in the accounting industry. This information can be utilized to update the curriculum and tailor it to the changing needs of the job market.2. Development of Learning Materials: By analyzing Big Data on industry needs and market demands, accounting educators can develop relevant and targeted learning materials. This helps improve the quality of accounting education and prepares students with the necessary skills for success in the job market.3. Providing Relevant Case Studies: Big Data can be used to identify real-world case studies that are relevant and engaging for students. This allows them to apply accounting concepts in practical contexts and understand the implications of financial decisions.4. Assisting Academic Research: Big Data provides rich resources for academics to conduct in-depth research on various accounting topics. This can help enhance understanding of industry trends, best practices, and current issues in

accounting.5. Student Performance Evaluation: Big Data can be used to track student performance and provide more detailed feedback to them. This data analysis can help accounting educators identify areas where students need additional attention and devise more effective learning strategies.6. Development of Analytical Skills: By leveraging Big Data in learning, accounting educators can help students develop the analytical skills needed in modern accounting professions. They can learn to collect, manage, analyze, and interpret data accurately. Thus, big data has great potential to enhance accounting education by providing relevant information, enriching learning experiences, and preparing students with the necessary skills for success in the ever-changing job market.

The role of Machine Learning (ML) in accounting education is as a tool that can enrich learning experiences, improve teaching efficiency, and provide deeper insights into evolving accounting practices. Here are some specific roles of Machine Learning in the context of accounting educators: 1. Personalized Learning: By using Machine Learning algorithms, accounting educators can adapt learning materials individually according to the needs and understanding levels of students. This can help ensure that each student receives a learning experience tailored to their abilities. 2. Student Data Analysis: Machine Learning can be used to comprehensively analyze student performance data, including grades, participation, and interaction with learning materials. This analysis can assist accounting educators in identifying relevant patterns and providing more detailed feedback to students. 3. Learning Material Recommendations: Based on student data analysis, Machine Learning systems can provide recommendations for additional learning materials or adjustments that can help students enhance their understanding of specific accounting concepts.4. Development of New Learning Materials: Machine Learning can be used to analyze industry trends, current research, and developments in accounting practices. This information can be utilized by accounting educators to develop new learning materials relevant to the changing needs of the job market.5. Utilizing AI-based Learning Technology: Various AI-based learning technology applications use Machine Learning to enhance learning experiences, such as virtual tutors, learning chatbots, and automated evaluation systems. Accounting educators can leverage this technology to improve teaching efficiency and provide better support to students.6. Academic Research: Machine Learning can also be used in academic research by accounting educators to analyze large and complex data sets, identify significant patterns, and generate new insights in the field of accounting. Thus, Machine Learning has great potential to transform how accounting educators teach, provide more personalized and meaningful learning experiences, and enhance students' understanding of important accounting concepts.

Table 8 demonstrates that each element of Machine Learning provides insights into the relationship between Machine Learning variables and the

accounting profession involved in statistical analysis, and how these variables mutually influence each other.

Table 8 The Big Influence of Machine Learning on the accounting profession

Variable	Direct Influence Path	Coefficient	Total		
	(R)	(R^2)	X_1	X_2	
X_3	ρ_{yx3}	$(\rho_{yx3})^2$	$\rho_{yx3}. r_{x3x1}. \rho_{yx1}$	$\rho_{yx3}. r_{x3x2}. \rho_{yx2}$	
	0,199	0,199 x 0,199	0,199 x 0,144 x 0,398	0,199 x 0,508 x 0,356	
		0,040	0,016	0,039	0,192

Source: Output SEM PLS

Based on the analysis of the research results regarding the significant influence of Machine Learning on the accounting profession: Variable X3 has a direct coefficient (ρyx3) of 0.199, indicating the direct influence of this variable on other variables in the model. The R^2 coefficient (0.199 x 0.199) indicates that variable X_3 explains approximately 19.9% of the variation in other variables in the model. Variable X_1 has a direct path coefficient (ρyx3 . rx3x1 . ρyx1) of 0.040, while variable X_2 has a direct path coefficient (ρyx3 . rx3x2 . ρyx2) of 0.192. This indicates the extent to which variables X_1 and X_2 are influenced by variable X3. Thus, the research results indicate that Machine Learning has a significant influence on the accounting profession, with variable X_3 playing an important role in explaining the variation in other variables in the model.

The impact of Machine Learning on the accounting profession can vary depending on its implementation. Some potential impacts that may occur include:1. Process Automation: Machine Learning can be used to automate routine tasks in accounting such as data processing, transaction analysis, and financial reporting. This can reduce the time and effort required for administrative work, allowing accountants to focus on deeper analysis and decision-making. 2. Predictive Analysis: Machine Learning can assist in analyzing financial data and customer behavior to provide more accurate predictive insights. This can help accountants forecast financial trends, identify risks, and design more effective strategies for companies.3. Fraud Detection: By using Machine Learning algorithms, accountants can enhance their ability to detect suspicious patterns or unusual activities in financial transactions. This aids in the prevention and detection of fraud more efficiently.4. Portfolio Optimization: In the field of financial management, Machine Learning can be used to optimize investment portfolios or other financial decisions. This can help companies manage risks and improve their investment returns.5. Increased Efficiency and Productivity: By leveraging Machine Learning technology,

accounting processes can become more efficient and productive. This can result in cost savings and improve the overall performance of the organization. While Machine Learning offers many positive potentials, it's important to remember that its implementation can also pose challenges, such as the need for robust technological infrastructure, the expertise required to implement and manage Machine Learning systems, as well as attention to data security and privacy. Therefore, while its impact could be significant, companies should also consider the implications and challenges associated with adopting this technology in the accounting profession.

5. Conclusion

This research explores the impact of using Artificial Intelligence (AI) and big data technology in the context of the accounting educator profession at the Educator Accountant Institute of the Indonesian Department of Accountants. Through careful analysis, several significant findings have been identified: Enhancement of Learning Efficiency, The integration of AI technology in accounting education has improved learning efficiency by enabling quick and easy access to educational resources. AI recommendation systems assist educators in designing learning materials that meet the individual needs of students. Improvement in Data Analysis Accounting educators have adopted the use of big data to analyze industry trends and market needs. This allows them to develop relevant curricula aligned with industry requirements, thus preparing students with the skills needed by the job market. Change in Educator Role The role of accounting educators have changed with the adoption of AI and big data technology. They not only act as information disseminators but also as learning facilitators who guide students in utilizing technology and applying accounting concepts in real-world situations. Challenges and Opportunities Despite significant benefits, the use of AI and big data technology also presents challenges, such as the need to develop new skills and own adequate infrastructure. However, with awareness of these challenges, there are opportunities to develop innovative curricula and produce graduates ready to compete in the digital era. Importance of Advanced Training Accounting educators need to receive advanced training in the use of AI and big data technology to optimize the potential of these technologies in the learning process. This requires investment in the professional development of educators and access to resources supporting the development of these skills. Overall, this research indicates that AI and big data technology have a significant impact on the accounting educator profession at the Educator Accountant Institute of the Indonesian Department of Accountants. By understanding and addressing the

challenges, educators can leverage this technology to improve the quality of learning and prepare students to face future challenges in the accounting industry.

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