

Impact of Artificial Intelligence in Improving the Effectiveness of Accounting Information Systems

Ikin Solikin^{1*} and Deni Darmawan²

^{1*}Accounting Program, Faculty of Economics and Business Education, Universitas Pendidikan Indonesia, Indonesia. ikin.solikin@upi.edu, Orcid: <https://orcid.org/0000-0002-3512-3700>

²Educational Technology and Communication Science Program, Universitas Pendidikan Indonesia, Indonesia. deni_darmawan@upi.edu, Orcid: <https://orcid.org/0000-0002-6842-3718>

Received: March 16, 2023; Accepted: May 20, 2023; Published: June 30, 2023

Abstract

The current study examines how artificial intelligence (AI) enhances the performance of a company's public accounting information systems (AIS). A quantitative approach was used to accomplish this goal and show how well it fits with reality within the scope of public accounting. Primary data was gathered through the use of a questionnaire and analysed with SPSS-22. To ensure the constructs' validity and trustworthiness, a cronbach's alpha and an exploratory factor analysis were performed. The hypothesis was examined via regression analysis. The research found that the use of AI techniques greatly contributed to the improvement of public accounting information system. The research suggests that organisations should coordinate the activities of intelligent systems with their financial targets.

Keywords: Artificial Intelligence, Accounting Audit, Accounting Information Systems.

1 Introduction

The goal of most businesses is to increase their market share relative to their competitors, and to do so, they employ a variety of tactics and techniques aimed at improving their overall performance (Vincent and Zakkariya, 2021). To this end, businesses employ a wide variety of methods, such as investing in new technology, favouring the use of machines over humans, keeping a tight rein on their cash reserves, monitoring worker output, and so on (Astuti and Rahayu, 2018).

One of the most crucial parts of any organisation is its financial and accounting infrastructure. It demonstrates how well it works and how far it can go. Typically, systems will make use of everything at their disposal to ensure they have access to reliable accounting and financial outputs that can shed light on the company's standing and level of market dominance (Albuhisi and Abdallah, 2018). Today, artificial intelligence (AI) represents one of the most important elements that can maximise performance through the use of technological tools and software. It can supply the business with a plethora of cutting-edge applications and programmes that can take the place of humans and drive the company to unprecedented levels of financial success (Mjongwana and Kamala, 2018).

Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications (JoWUA), volume: 14, number: 2 (June), pp. 82-93. DOI: [10.58346/JOWUA.2023.12.007](https://doi.org/10.58346/JOWUA.2023.12.007)

*Corresponding author: Accounting Program, Faculty of Economics and Business Education, Universitas Pendidikan Indonesia, Indonesia.

This study was prompted by the hypothesis that there is a correlation between the incorporation of artificial intelligence systems in all of their incarnations into organisational work and the performance of the organisation in terms of the financial output it generates. Some examples of how this could occur include the implementation of automated accounting systems, improved auditing procedures, increased decision-making capacity, and accounting information systems (Buinevich, M.V., 2021).

2 Literature Review

Artificial Intelligence

Artificial intelligence is a term first used by John McCarthy. Research has shown that this is the case (Yadav, Gupta, Sahu, & Shrimal, 2017). The study of how to design machines to perform tasks better and more precisely than humans is the focus of artificial intelligence (AI), a subject of computer science (Elaine, 2000). Artificial intelligence can also be seen as the capacity of a programmable system to carry out tasks normally associated with the human brain. Knowledge and the ability to acquire it, judgement, creative thought, and an appreciation of relationships are all examples of such activities.

The primary goal of AI research and development is to create intelligent computers with human-like behaviour and capabilities. According to Carol and O'Leary (2013), there are four main categories that can be used to categorise AI: intelligence, business, research, and programming. What we mean by "artificial intelligence" here is the process of programming machines to mimic human behaviour. For human and business challenges, business and research dimensions are a potent instrument that often outperforms human solutions. Symbolic programming is the focus of the final programming dimension.

According to He et al. (2019), artificial intelligence is one of the scientific endeavours to improve the quality of human life by training machines to mimic human mental abilities and the way they work, thereby mastering human skills via the machine and freeing the human mind to focus on other tasks, such as problem-solving and the creation of new strategies.

One of the most significant recent technical developments that has altered the world and provided a tremendous qualitative leap in the existence of humans is artificial intelligence, which has its roots in computer science (Gunning and Aha, 2019). AI, as defined by Haenlein and Kaplan (2019), is the capacity of machines to perform mental operations normally associated with human beings; these operations include learning, problem solving, and critical thinking.

Accounting Information Systems (AIS)

Accounting information systems, as described by Sari et al. (2019), are a collection of resources (hardware and software) that work together to analyse, manage, and distribute financial data. Regardless of a company's size, Accounting Information Systems (AIS) are valuable because of their ability to standardise accounting processes across the board (Elsharif, 2019). Simply said, AIS plays a crucial part in the management of financial performance for any business, no matter how big or little it may be. AIS also aids in identifying the present and future financial state of the firm (Al-Hashimy et al, 2019). As a result, all risks can be considered in the decision-making process, allowing the business to more easily strive for excellence in all aspects (Hariyati et al, 2019).

Artificial Intelligence in Accounting Information Systems (AIS)

Computerized records, audits, and tax procedures, as well as various strategies for detecting and preventing fraud, are all examples of AI's presence in the accounting industry (Kokina and Davenport,

2017). AI in accounting has received a lot of interest since it allows accountants to add value to their work (Chukwudi et al, 2018). Why is accounting AI so important? Because it frees up decision-makers to do what they do best, while AI takes care of the tedious, repetitive tasks like data input, analysis, and organising that would otherwise take up valuable human time. Accountants can focus on tasks that require a human touch, such evaluating and analysing outputs, matching them with reality, and making decisions based on them, while intelligent algorithms take care of keeping them up-to-date (Ionescu, 2019).

According to Damerji and Salimi (2021), AI has helped accountants by allowing them to cope with complex figures and data, learn new systems quickly, and spend less time on administrative activities. This has allowed them to devote more time to strategic decision-making. Accounting AI, as Luo et al. (2018) noted, will handle massive workloads that humans could struggle to handle. If the inputs are mostly precise and exact, the outputs of these jobs are very accurate and error-free. Faccia et al. (2019) noted that AI considerably aids in improving the audit process by identifying errors and eliminating inappropriate requests. The audit is both genuine and grounded in the actual practises and goals of the business.

H1: “Artificial Intelligence (AI)” has a great influence on “Effectiveness of Accounting Information Systems (EAIS)”

Factors Driving Demand for Artificial Intelligence in Accounting Information Systems (AIS)

Everything AI is applied to undergoes a radical transformation. It's quickly becoming one of the most cutting-edge developments in the globe. Its effects can be seen in many fields, including business, medicine, education, home automation, social science, and impact research. Innovations made possible by artificial intelligence have the potential to revolutionise the finance and accounting industries by relieving human finance professionals of mundane yet profitable work. However, businesses are cautious to implement AI due to questions about the business case and ROI.

Innovations made possible by artificial intelligence in the finance and accounting sectors will revolutionise these fields by relieving financial personnel of time-consuming tasks so that they can focus on more consequential tasks. Companies can take use of the existing AI prospects for process streamlining and expertise expansion. Here are three forces that are increasing interest in accounting information systems that incorporate AI.

- **Automated Accounting Systems (AAS)**

Automation in auditing and accounting has been greatly influenced by the rise of two distinct but related technologies: artificial intelligence (AI) and robotic process automation (RPA). When it comes to intelligent automation, RPA and AI represent two poles. Automation is rapidly moving away from a focus on processes and towards an emphasis on data. While RPA relies heavily on procedure (automating rule-based processes), reliable data is essential for AI to learn and perform effectively (CFB, 2018). Because of their repetitive nature and lack of nuanced decision-making, internal performance reporting, purchase-to-pay, and record-to-report are frequently selected for RPA (Embracing robotic automation during the growth of finance, 2018). Up to 40 percent of today's transactional accounting may have been automated, according to some estimates (Axson, 2015). Accounting robots are expected to make human labour in this area obsolete while simultaneously simplifying and speeding up a wide variety of tasks (Professional accountants – the future: Generation Next, 2016).

The usage and development of expert systems constitutes the most advanced kind of artificial intelligence in the field of accounting. The accountant can consult the expert system on a wide range of topics. With the advent of cognitive and analytics technology to audit, the eye-shaded accountant who meticulously checks and cross-foots credit and debit entries is likely to become extinct. In contrast, the accountant (auditor) who monitors, understands, and improves cognitive and analytical processes and systems will thrive (Davenport, 2016). As a result, accountants can benefit more from the deployment of expert systems than from a complete technological overhaul (Alex, Fogel, Wilbank, Benard, and Serge, 2014). The accountants of business owners used to make decisions based on numbers that were often out of date, but with the advent of the Experts system and the automation of the data processes, there is direct access to the most up-to-date information about any business, allowing for the formation of much more informed decisions. It's also simple to implement whatever fixes are needed.

In terms of cash flow, AI is also used in financial accounting. The analysis of financial reports filed with the SEC, as well as the determination of financial status by ratios, cash-flow evaluations, mergers, acquisitions, and other investment decisions, leases, and more, are all areas where expert systems are applied in financial accounting, as shown by the findings of a study by Yang and Miklos (2008). The validity of expert systems in taxation was further confirmed by O'Leary (2003). Tax efficiency on stock investments is a strength of this system (O'Leary, 2003). Value-added tax, corporate tax accrual, planning procedure, corporate tax planning, and tax preparation system are all areas in which this expert system may help the oil and gas business. Expert systems like ala and Intuit's (chip-soft) are available for international taxation to optimise a company's foreign tax situation and international tax planning.

The accounting sector will undergo radical shifts as a result of the widespread adoption of automation technologies like RPA and AI. Machines will take over the routine, boring work that has traditionally been done by lower-level employees, freeing up more time for strategic, judgment-based work that can only be done by humans (Gotthardt et al., 2019).

H2: “Artificial Intelligence (AI)” has a great influence on “Automated Accounting Systems (AAS)”

H3: Automated Accounting Systems (AAS) has a great influence on “Effectiveness of Accounting Information Systems (EAIS)”

- **Enhanced Audit Processes (EAP)**

The purpose of the research presented in (Munoko, I., et al., 2020) was to explore the moral and legal consequences of applying AI in auditing. Benefits like as reducing time, speeding up data analysis, increasing accuracy, gaining insight into business processes, and better serving customers are among those cited by accounting firms as reasons for adopting AI for use in auditing and consulting.

Independence, objectivity, and competence are the pillars of an effective internal audit, as Singh, K.S.D., (2021) discovered that these factors are also associated to the quality of internal audit. The use of AI has led to dramatic shifts in the way businesses and organisation's function. A company must perform an audit, which requires examining and verifying several financial dealings. It is impossible to thoroughly examine and verify all corporate transactions using a manual auditing process. Using AI and ML, auditors may not only more effectively examine a company's financial transactions as a whole, but also save time doing so. Research shows that auditors' level of professional scepticism and judgement play a role in how effective their audits are (Puthukulam, G., et al, 2021).

According to Fedyk, A., et al. (2022), artificial intelligence (AI) can replace human auditors and increase efficiency while decreasing costs. It will take time for the impact on employment to become apparent. It has been found that there is a 5% lower chance of an audit restatement for every one standard

deviation shift in recent AI investments. After three years, the number of accounting staff is reduced by 3.6%, and after four years, it has decreased by 7.1%. This is in addition to a decrease in log per customer fees of 0.009.

By highlighting issues unique to the computerised accounting system, Al-Nuaimat (2013) hoped to show how the use of computers has changed the nature of accounting system applications and, in turn, the work of the internal auditor. The study found that the internal auditor's routines change depending on the accounting system in use.

H4: Effectiveness of Accounting Information Systems (EAIS) has a great influence in on “Enhancing Audit Processes (EAP)”

- **Decision Making Capacity (DMC)**

One of the trickiest parts of running a business is making decisions. Indeed, there is always a risk of making bad decisions, regardless of the leader's or decision-analytical maker's talents, intelligence, or experiences. It's undeniable that AI has advanced tremendously in recent years, resulting in a step-change improvement in many different areas of study. As a result, it has been instrumental in streamlining and enhancing a wide range of back-office operations for many different types of businesses. Through their research on a financial institution, Eletter, Yaseen, and Elrefae (2020) have made it clear that the intelligent information system would supply decision-makers with useful data. They gain a performance edge and improved competitiveness as a result of reduced decisional ambiguity and improved financial service quality.

Recent research by Bosco (2020) has demonstrated the value of AI in improving business performance by helping leaders use the technology to make more informed decisions that get the company closer to its stated objectives. According to Este et al. (2020), "artificial intelligence" (AI) is "the science and engineering of the intelligent machines' production" and "an amalgamation of numerous technologies." AI approaches, as defined by Vedamuthu (2020), are those that aim to build computer systems that mimic the way people use their senses, intelligence, and ability to carry out tasks that only a human mind could complete. In reality, AI has recently been used in healthcare to aid in areas like clinical ordering systems and the identification of individuals at high risk in need of screening. Furthermore, due to AI's superiority to human intellect in areas like visuospatial processing speed and pattern recognition, it will have an ever-increasing impact in healthcare and other industries (Este et al., 2020).

Similar to how the human brain stores knowledge learned and acquired via daily experience, computers store millions of facts inside to establish a central database. Then, specialised algorithms are written to give computers a logical way to process this data, allowing them to solve the problems and make the judgements (Jabbari, 2016). In addition to highlighting AI's value, this study's preparation was motivated by a desire to compile and critically examine a range of relevant prior research.

H5: Effectiveness of Accounting Information Systems (EAIS) has a great influence on improving “Decision-Making Capacity (DMC)”

3 Research Objectives

- To identify the factors acting as driving demand for artificial intelligence (AI) in accounting.

- To propose a conceptual model assessing the influence of artificial intelligence in improving the effectiveness of accounting information systems that further helps in enhancing Audit Process and decision-making capacity.
- To conduct an empirical analysis to validate the proposed model.

4 Conceptual Framework

The conceptual model represents the relation with the factors acting as driving demand for artificial intelligence (AI) in accounting information systems.

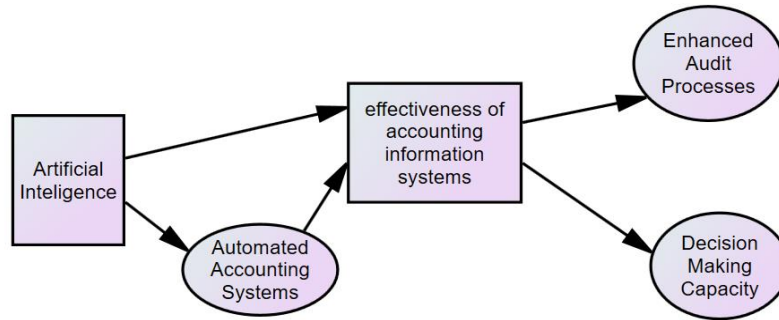


Figure 1: Conceptual Framework Showing Relation with the Factors Acting as Driving Demand for AI in Accounting Information Systems

5 Research Methodology

Primary data was gathered through the use of a questionnaire and analysed with SPSS-22. A total of 250 managers, department heads, and accountants from Indian manufacturing companies were randomly selected to fill out the online survey. The assertions were rated on a five-point Likert scale, with one representing strongly agreeing and five strongly disagreeing. To ensure the constructs' validity and trustworthiness, a cronbach's alpha and a factor analysis were performed. The hypothesis was evaluated by means of a regression analysis.

6 Data Analysis

Demographic Profile

Table 1: Descriptive Statistics of Demographic Profile

Variable	Description	Frequency	Valid %
Gender Profile	Male	106	42.4
	Female	144	57.6
Age Profile	21-29 years	65	26.0
	30-39 years	92	36.8
	40-49 years	64	25.6
	46-55 years	29	11.6
Highest Education Level	Ph.D./ Doctorate or higher	7	2.8
	MBA/ MCA/ CA/ ICWA	184	73.6
	Post-Graduate/ Master's Degree	21	8.4
	Graduate	38	15.2

Working Experience in years	1-2 years	71	28.4
	3-5 years	125	50.0
	6-10 years	47	18.8
	11 years and more	7	2.8
Marital Status	Married	178	71.2
	Unmarried	72	28.8
Monthly Income	Rs.10-20 thousands	57	22.8
	Rs.21-30 thousands	73	29.2
	Rs.31-40 thousands	63	25.2
	Rs.41-50 thousands	40	16.0
	More than -Rs 50 thousand	17	6.8
Current Designation	Manager	96	38.4
	Accountant	116	46.4
	Head of Department	33	13.2
	Other	5	2.0

Exploratory Factor Analysis (EFA)

The significance of conforming constructs was evaluated using the EFA. A factor loading of 0.50 has been utilised as a threshold in this study. In light of these findings, it appears that factor analysis is an appropriate method for this data set. Eighteen items were included in the final analysis, and all of them had loadings greater than 0.5.

Table 2: Factor Analysis

Table 2: Results of Exploratory Factor Analysis								
Macro Variable	Micro Variable	Factor loadings	KMO Measure of Sample Adequacy (>0.5)	Bartlett's Test of Sphericity		Items confirmed	Items dropped	Cum % of loading
				Chi Square	Sig. (<.10)			
Artificial Intelligence (AI)	AI1	.899	.707	995.941	.000	4	0	80.060
	AI2	.903						
	AI3	.898						
	AI4	.878						
Automated Accounting Systems (AAS)	AAS1	.951	.772	691.182	.000	3	0	89.922
	AAS2	.952						
	AAS3	.943						
Enhanced Audit Processes (EAP)	EAP1	.972	.783	935.808	.000	3	0	93.988
	EAP2	.969						
	EAP3	.967						
Decision-Making Capacity (DMC)	DMC1	.959	.777	897.110	.000	3	0	93.363
	DMC2	.969						
	DMC3	.971						
Effectiveness of Accounting Information Systems (EAIS)	EAIS1	.927	.907	1336.435	.000	5	0	84.924
	EAIS2	.939						
	EAIS3	.942						
	EAIS4	.907						
	EAIS5	.892						

Reliability

A value of 0.70 for Chronbach's Alpha is generally accepted as the minimum threshold for an internally consistent scale. The same threshold of Cronbach's alpha 0.7 has been used in this analysis.

Table 3: Result of Reliability Analysis

	Variable	Cronbach's Alpha
1	Artificial Intelligence (AI)	.913
2	Automated Accounting Systems (AAS)	.943
3	Enhanced Audit Processes (EAP)	.968
4	Decision-Making Capacity (DMC)	.964
5	Effectiveness of Accounting Information Systems (EAIS).	.954
Over all questionnaire		.974

Regression Analysis

Table-4 revealed by regression analysis shows that Artificial Intelligence (AI) is significant predictors of effectiveness of Accounting Information Systems (EAIS) along with Automated Accounting Systems (AAS).

The R square values .583 and .539 indicate that “Artificial Intelligence (AI)” is able to explain Effectiveness of Accounting Information Systems (EAIS), and “Automated Accounting Systems (AAS)” to the extent of 58.3% and 53.9% respectively. The R square value .560 indicates that “Automated Accounting Systems (AAS)” is able to explain Effectiveness of Accounting Information Systems (EAIS) to the extent of 56%. Similarly, the R square values .303 and .524 indicate that Effectiveness of Accounting Information Systems (EAIS) is able to explain “Enhancing Audit Processes (EAP)” and “Decision-Making Capacity (DMC)” to the extent of 30.3% and 52.4% respectively. “The ANOVA values for the regression model are indicating the validation at 95 percent confidence level”.

The coefficient summary as shown in Table 4 gives beta value of .764 for AI to EAIS, .734 for AI to AAS, .748 for AAS to EAIS, .551 for EAIS to EAP and .724 for EAIS to DMC, which are fairly representing the impact of Artificial Intelligence (AI) on Effectiveness of Accounting Information Systems (EAIS), Artificial Intelligence (AI) on Automated Accounting Systems (AAS), Automated Accounting Systems (AAS) on Effectiveness of Accounting Information Systems (EAIS), Effectiveness of Accounting Information Systems (EAIS) on Enhanced Audit Processes (EAP) and Decision-Making Capacity (DMC)

Table 4: Result of Regression Analysis

Independent Variable	Dependent Variable	Model Summary		ANOVA ^a			Coefficients ^a		
		R	R Square	Mean Square	F	Sig.	Standardized Coefficients Beta	t	Sig.
AI	EAIS	.764 ^a	.583	108.949	347.210	.000 ^b	.764	18.634	.000
AI	AAS	.734 ^a	.539	98.692	290.293	.000 ^b	.734	17.038	.000
AAS	EAIS	.748 ^a	.560	104.576	315.546	.000 ^b	.748	17.764	.000
EAIS	EAP	.551 ^a	.303	90.475	108.036	.000 ^b	.551	10.394	.000
EAIS	DMC	.724	.524	109.949	273.113	.000 ^b	.724	16.526	.000

7 Results of Hypotheses Testing

As can be seen in Table 5, all five of the original hypotheses suggested within the conceptual study framework have been accepted.

Table 5: Summary of Hypotheses Testing

Hy. No.	Independent Variables	to	Dependent Variables	R-Square	Beta Coefficient	t-value	Sig Value	Status of Hypotheses
H1	Artificial Intelligence (AI)	→	Effectiveness of Accounting Information Systems (EAIS)	.583	.764	18.634	.000	Accepted
H2	Artificial Intelligence (AI)	→	Automated Accounting Systems (AAS)	.539	.734	17.038	.000	Accepted
H3	Automated Accounting Systems (AAS)	→	Effectiveness of Accounting Information Systems (EAIS)	.560	.748	17.764	.000	Accepted
H4	Effectiveness of Accounting Information Systems (EAIS)	→	Enhanced Audit Processes (EAP)	.303	.551	10.394	.000	Accepted
H5	Effectiveness of Accounting Information Systems (EAIS)	→	Decision-Making Capacity (DMC)	.524	.724	16.526	.000	Accepted

8 Conclusion

Companies today must adopt AI practises if they hope to survive in the near future. This study examined the impact of artificial intelligence (AI) in improving the Automated Accounting Systems (AAS) and effectiveness of accounting information systems (AIS). The results indicated that “artificial intelligence (AI)” is a significant predictor of “effectiveness of accounting information systems (AIS)”. Improvements in Automated Accounting Systems (AAS) enhances the effectiveness of Accounting Information Systems (EAIS). Enhancement in the effectiveness of Accounting Information Systems (EAIS) further helps in Enhancing Audit Processes (EAP), and improves Decision-Making Capacity (DMC). The research also indicated that AI helps reduce the difficulties accountants experience and prioritises doing their work more effectively and wisely.

9 Limitations and Recommendations

Since the manufacturing sector is the sole focus of this research, the generalizability of the framework may be improved by future testing in other sectors. It was also a rather small study, with only 250 participants; a larger sample from a larger population would likely yield more reliable results. It is important to explore the possibility of further improvement through the use and development of more complex AI applications like neural networks, expert systems, fuzzy systems, genetic programming, and hybrid systems. If researchers in AI and accounting could put aside their differences and work together, they could make great strides in the field of artificial intelligence applied to accounting.

10 Acknowledgements

The authors would like to thank the editors and reviewers for their review and recommendations for publication

Funding Statement

This study was funded by Universitas Pendidikan Indonesia, through funds provided for publication support and research dissemination, established through the University's Professional Networking, Knowledge Development and Knowledge Dissemination Program.

Authors' Contributions

Both authors contributed toward data analysis, drafting and revising the paper and agreed to be responsible for all the aspects of this work.

Declaration of Conflicts of Interests

Authors declare that they have no conflict of interest.

Data Availability Statement

The database generated and /or analysed during the current study are not publicly available due to privacy, but are available from the corresponding author on reasonable request.

Declarations

Author(s) declare that all works are original and this manuscript has not been published in any other journal.

Reference

- [1] Albuhihi, A.M., & Abdallah, A.B. (2018). The impact of soft TQM on financial performance: The mediating roles of non-financial balanced scorecard perspectives. *International Journal of Quality & Reliability Management*, 35(7), 1360-1379.
- [2] Alex, H., Fogel, K., Wilbank, C., Benard, G., & Serge, M. (2014). AI, robotics and the future of jobs. Pew Research Centre. *Association of Business Educators of Nigeria Book of Readings*, 2(1), 156-61.
- [3] Al-Hashimy, H.N.H., Al Jubair, A.S., & Jasim, E.T. (2019). The effect of accounting information systems (AIS) on enterprise resource planning (ERP). *Journal of Southwest Jiaotong University*, 54(5), 1-11.
- [4] Almasria, N., Airout, R.M., Samara, A.I., Saadat, M., & Jrairah, T.S. (2021). The role of accounting information systems in enhancing the quality of external audit procedures. *Journal of management Information and Decision Sciences*, 24(7), 1-23.
- [5] Astuti, E., & Rahayu, S.M. (2018). The influence of information technology strategy and management support to the internal business process, competitive advantage, financial and non-financial performance of the company. *International Journal of Web Information Systems*, 14(3), 317-333.
- [6] Axson, D. (2015). Finance 2020: Death by digital. *The best thing that ever happened to your finance organization (2015)*.

- [7] Bosco, M.V. (2020). A Study on Artificial Intelligence Interaction with Organizational Performance. *International Journal of Research in Engineering, Science and Management*, 3(2), 483-486.
- [8] Bots, C.F.B. (2018). The Difference between Robotic Process Automation and Artificial Intelligence. *Retrieved May, 10, 2019*.
- [9] Buinevich, M.V., Izrailov, K.E., Kotenko, I.V., & Kurta, P.A. (2021). Method and algorithms of visual audit of program interaction. *Journal of Internet Services and Information Security (JISIS)*, 11(1), 16-43.
- [10] Carol, E., & O’Leary, D. (2013). Introduction to artificial intelligence and expert system.
- [11] Chukwudi, O., Echefu, S., Boniface, U., & Victoria, C. (2018). Effect of artificial intelligence on the performance of accounting operations among accounting firms in South East Nigeria. *Asian Journal of Economics, Business and Accounting*, 7(2), 1-11.
- [12] Damerji, H., & Salimi, A. (2021). Mediating effect of use perceptions on technology readiness and adoption of artificial intelligence in accounting. *Accounting Education*, 30(2), 107-130.
- [13] Davenport, T. (2016). Innovation in Audit Takes the Analytics, AI Routes. Audit Analytics, Cognitive Technologies, to set Accountants Free from Grunt Work.
- [14] Elaine, R. (2000). Overview of AI and its application area.
- [15] Eletter, S.F., Yaseen, S.G., & Elrefae, G.A. (2010). Neuro-based artificial intelligence model for loan decisions. *American Journal of Economics and Business Administration*, 2(1), 27-34.
- [16] Elsharif, T.A. (2019). The elements of accounting information systems and the impact of their use on the relevance of financial information in Wahda Bank—Benghazi, Libya. *Open Journal of Business and Management*, 7(3), 1429-1450.
- [17] Faccia, A., Al Naqbi, M.Y.K., & Lootah, S.A. (2019). Integrated cloud financial accounting cycle: how artificial intelligence, blockchain, and XBRL will change the accounting, fiscal and auditing practices. *In Proceedings of the 3rd International Conference on Cloud and Big Data Computing*, 31-37.
- [18] Fedyk, A., Hodson, J., Khimich, N., & Fedyk, T. (2022). Is artificial intelligence improving the audit process? *Review of Accounting Studies*, 27(3), 938-985.
- [19] Gotthardt, M., Koivulaakso, D., Paksoy, O., Saramo, C., Martikainen, M., & Lehner, O. (2020). Current state and challenges in the implementation of smart robotic process automation in accounting and auditing. *ACRN Journal of Finance and Risk Perspectives*.
- [20] Gunning, D., & Aha, D. (2019). DARPA’s explainable artificial intelligence (XAI) program. *AI Magazine*, 40(2), 44-58.
- [21] Haenlein, M., & Kaplan, A. (2019). Guest editorial to the special issue, A brief history of AI: On the past, present, and future of artificial intelligence. *California Management Review*, 61(4), 5-14.
- [22] He, J., Baxter, S.L., Xu, J., Xu, J., Zhou, X., & Zhang, K. (2019). The practical implementation of artificial intelligence technologies in medicine. *Nature medicine*, 25(1), 30-36.
- [23] Ionescu, L. (2019). Big data, blockchain, and artificial intelligence in cloud-based accounting information systems. *Analysis and Metaphysics*, (18), 44-49.
- [24] Jabbari, Latifa., (2016). Methods of Decision Making Using Artificial Intelligence: A Comparative Study of Predicting the Electric Power of Tlemcen Province Using Artificial Neural Networks. Published PhD thesis, Faculty of Economics, Facilitation and Business Sciences, Abi Bakr Belkaid University, Algeria.
- [25] Jeste, D.V., Graham, S.A., Nguyen, T.T., Depp, C.A., Lee, E.E., & Kim, H.C. (2020). Beyond artificial intelligence: exploring artificial wisdom. *International psychogeriatrics*, 32(8), 993-1001.
- [26] Kokina, J., & Davenport, T.H. (2017). The emergence of artificial intelligence: How automation is changing auditing. *Journal of emerging technologies in accounting*, 14(1), 115-122.

- [27] Luo, J., Meng, Q., & Cai, Y. (2018). Analysis of the impact of artificial intelligence application on the development of accounting industry. *Open Journal of Business and Management*, 6(4), 850-856.
- [28] Mjongwana, A., & Kamala, P.N. (2018). Non-financial performance measurement by small and medium sized enterprises operating in the hotel industry in the city of Cape Town. *African Journal of Hospitality, Tourism and Leisure*, 7(1), 1-26.
- [29] Munoko, I., Brown-Liburd, H.L., & Vasarhelyi, M. (2020). The ethical implications of using artificial intelligence in auditing. *Journal of Business Ethics*, 167, 209-234.
- [30] O'Leary, D. (2003). Expert systems in accounting.
- [31] Puthukulam, G., Ravikumar, A., Sharma, R.V.K., & Meesaala, K.M. (2021). Auditors' perception on the impact of artificial intelligence on professional skepticism and judgment in oman. *Universal Journal of Accounting and Finance*, 9(5), 1184-1190.
- [32] Sari, N.Z.M., Afifah, N.N., Susanto, A., & Sueb, M. (2019). Quality accounting information systems with 3 important factors in BUMN Bandung Indonesia. In *First International Conference on Administration Science (ICAS 2019)*, 93-96. Atlantis Press.
- [33] Singh, K.S.D., Ravindran, S., Ganesan, Y., Abbasi, G.A., & Haron, H. (2021). Antecedents and internal audit quality implications of internal audit effectiveness. *International Journal of Business Science & Applied Management (IJBSAM)*, 16(2), 1-21.
- [34] Tjahjadi, B., & Soewarno, N. (2019). The mediating effect of intellectual capital, management accounting information systems, internal process performance, and customer performance. *International journal of productivity and performance management*, 68(7), 1250-1271.
- [35] Vedamuthu, T. (2020). *Artificial Intelligence and Human Collaboration in Project Decision-making* (Doctoral dissertation, The College of St. Scholastica).
- [36] Vincent, V.Z., & Zakkariya, K.A. (2021). Role of Business Incubation on The Financial and Non-Financial Performance of Technology Startups: A Multivariate Multiple Regression Analysis. *Journal of Entrepreneurship Education*, 24(5), 1-16.
- [37] Yadav, A., Gupta, V., Sahu, H., & Shrimal, S. (2017). Artificial Intelligence-New Era. *International Journal of New Technology and Research*, 3(3), 30-33.
- [38] Yang, D., and Miklos, A. (2008). The application of expert system.

Authors Biography



Ikin Solikin is an Associate Professor, working as a permanent staff in the field of Accounting within the Faculty of Economics and Business, and also currently the Director of Finance of Universitas Pendidikan Indonesia. He is specialised in public accounting, currently, with a bias in sharpening his knowledge in the area of accounting information systems (AIS).



Deni Darmawan is a Professor of Universitas Pendidikan Indonesia, working as a permanent staff withing the field of Educational Technology and Communication Sciences at the university. He is currently, the director of Public Relations of Universitas Pendidikan Indonesia.