Artificial Intelligence and the Role of External Auditor in Indonesia

Engkos Achmad Kuncoro1, Lindrianasari2, and Ayu Fatmasari3

1Management Department, BINUS Business School Undergraduate Program, Bina Nusantara University, Jakarta, Indonesia 11480
2School of Accounting, Bina Nusantara University, Jakarta, Indonesia 11480
3Ministry of Finance of Republic of Indonesia, Jakarta, Indonesia

Abstract. This research is motivated by the desire to obtain empirical evidence whether Artificial Intelligence has an impact and can take over the role of external auditors. The object of this research is an external auditor who works at a Public Accounting Firm (PAF) in Indonesia. This study uses primary data from respondents who are the research targets using an electronic questionnaire. The final data used in this study were 84 external auditors from public accounting firms registered at the PPPK Ministry of Finance of the Republic of Indonesia. This study found that more intelligent auditors with high technology (AI) tend to perform the auditor role on their clients better and vice versa. In addition, external auditors' understanding of AI cannot be judged by age, but this study found that male public accountants could perform their role as auditors better. A high level of education has been shown to influence an external auditor's understanding of AI and enhance his or her competence working with AI. With this capability, the external auditor can play its role well as an independent party for the auditee. Regulators must begin to require AI capabilities for accountants in Indonesia, especially external auditors to improve information technology capabilities in the field of auditing, because external auditors are the party who will provide assurance on the financial statements of companies in Indonesia.

1 Background

In the era of globalization and the industrial revolution 4.0, technology is developing rapidly. Various kinds of technology, one of which is Artificial Intelligence (hereinafter AI), are increasingly being created to facilitate human work. However, as technology develops to make it easier for humans, there is also a concern that human work could be completely taken over by technology or AI to replace humans as workers. The dilemma of "artificial intelligence vs. human intelligence" is widely debated among academics and practitioners, covering many controversial issues related to the prospects of some jobs, the new skills and competencies required, the way humans and machines can work together efficiently and effectively (Stancheva-Todorova, 2018).

Law of the Republic of Indonesia Number 5 of 2011 concerning Public Accountants states that Public Accountants have a major role in improving the quality and credibility of financial information or financial statements of an entity. The law also explains that public accounting services are services that can be used in making economic decisions and have a broad influence in the era of globalization. Public accountants who are external auditors for auditees have an important role in supporting a healthy and efficient national economy, as well as increasing transparency and quality of information in the financial sector. Accounting has a history of more than 25 years in AI applications, particularly in financial reporting and auditing tasks. According to a 2015 study conducted at the University of Oxford, accountants have a 95 percent chance of losing their jobs because machines take over the roles of data analysis and number crunching. However, in the same report it was found that as technology advances, some jobs may disappear but on the other hand there are types of jobs that are created (Greenman, 2017) and greatly challenge the competence of auditors in the era of the industrial revolution 4.0.

2 Literature review

2.1 Theoretical framework

Value creation strategy. A company can have a competitive advantage if it successfully designs and implements a value creation strategy. Value creation that enhances competitive advantage can occur if competitors do not use or implement the same strategy. The ‘traditional’ value creation models of stores, chains and networks can optimize the production of goods and services (Milkau, 2019). As a result, competitive advantage is achieved by exploring internal data: internal expert knowledge, continuous monitoring of process parameters, or the client's long-term transaction history. However, today, the traditional value creation
The development of AI technology has affected almost every aspect of business operations, requiring companies to adapt and integrate AI concepts to remain competitive. This is particularly true in the field of accounting and auditing, where the ability to function in a world of increasing competition demands not just survival but also innovation. According to a survey, it is likely that most jobs will be handled by robots in the next 20 years, including low-end manufacturing, sales and accounting. Therefore, basic accounting practitioners are one of the groups that will be affected by artificial intelligence (Li and Zheng, 2018). In other words, in another 20 years, accountants will again play a different role and will need to master the specialization and use of technology (Greenman, 2019). The lack of skills and information related to the operation of technology causes new accountants, such as the millennial generation, to feel threatened by the presence of technology (Handoko, Mulyawan, Samuel, Rianty, and Gunawan, 2019).

### 2.3 The role of auditors

The role of the external auditors referred to in this study is in line with the services offered by the Public Accounting Firm in accordance with the Law of the Republic of Indonesia Number 5 of 2011, such as:

- **a)** Insurance services
- **b)** Audit services for historical financial information
- **c)** Review services for historical financial information
- **d)** Other insurance services
- **e)** Other services related to accounting, finance and management:
  - Performance audit services,
  - Internal audit services,
  - Tax services,
  - Financial report compilation services,
  - Bookkeeping services,
  - Approval of service procedures for financial information, and
  - Information technology system services.

Assurance services aim to provide certainty to users on the results of evaluation or measurement of financial and non-financial information based on criteria. Audit services from external auditors for historical financial information are assurance engagements that are applied to historical financial information with the objective of providing reasonable assurance regarding the presentation of historical financial information. A review of historical financial information is an assurance engagement that is applied to historical financial information with the aim of providing limited assurance about the fairness of presentation of historical financial information. Other assurance services are insurance engagements other than auditing or reviewing historical financial information. Other assurance services include assurance engagements to evaluate regulatory compliance, evaluate the effectiveness of internal controls, review prospective financial information, and issue convenient letters for public offerings.

### 2.4 Previous studies and hypothesis development

Value creation strategy. A company can have a competitive advantage if it successfully designs and implements a value creation strategy. Value creation that enhances competitive advantage can occur if...
competitors do not use or implement the same strategy. The 'traditional' value creation models of stores, chains and networks can optimize the production of goods and services (Milkau, 2019). As a result, competitive

Past research describes the four main components of AI. The four components are (1) expert system, (2) heuristic problem solving, (3) natural language processing, and (4) vision (Singh, Mishra & Sagar 2013). The expert system acts as an expert and supports performance. Heuristic problem solving aims to find the optimal solution. Natural language processing provides communication between humans and machines in natural language. Meanwhile, vision denotes the ability to recognize shapes and features, automatically.

The issue of applying AI in the business and accounting world is highly debated. Some experts are optimistic that AI will not have a significant effect on the presence of a talented workforce, but others are pessimistic. It is believed that AI will not replace accountants but will only change the focus of the tasks to be carried out (Greenman, 2017). AI and machine learning will completely change the way auditors function in the accounting profession in the future. This change will also change the way audit functions and tasks currently and will continue in the future.

The impact of AI on the role of accountants creates an obligation for accounting educators to change the mindset of students and develop the necessary skills and competencies related to smart technology and its additional business applications (Stancheva-Todorova, 2018). All professional accountants work background, whether they are serving as financial managers in a particular organization, acting as independent auditors of the organization's financial information and systems, or acting as consultants advising organizations, they must be able to interact with and have knowledge of information technology, which enables them to do their job with high competence (Wessel, 2005).

As well as confusing many professions, the accelerated automation of recent years will trigger a crisis for workers and their families due to layoffs, which in turn will have an impact on the entire global economy. This significant change will indeed trigger a culture shock for some workers. They doubt that new jobs or massive retraining will be enough to replace existing job functions because AI removes complex skills faster than workers can adapt. The workforce may not lose 40 percent of jobs by 2025, but the threat of extreme disruption forces workers to prepare skills that will enable them to work using AI (Halal, Kolber, Davies, and Global, 2017).

Despite the ability of AI to help humans cope with the complexities of work through a superior analytical approach, the role of decision makers and human intuition in dealing with the uncertainty and uncertainty of decision making remains unquestionable. Machines rely on humans when unconscious decision heuristics are needed to evaluate and facilitate decision outcomes (Jarahi, 2018). In line with the many and complex tasks of the auditor, the issue of implementing AI and the task of the auditor is interesting to study. Previously, AI studies in auditing and accounting have been carried out by business and accounting researchers. Predictably, complex AI applications can be designed to better solve some auditing problems. AI will hold the key to solving several audit and assurance task problems through the use of AI techniques such as fuzzy logic, neural networks (Baldwin, Brown, and Trinkle, 2006).

Technology cannot replace human emotional intelligence (Akhter and Sultana, 2018). Humans still have to be involved in making important decisions that robo-advisors or Artificial Intelligence can't. Advanced technology is used in accounting to provide clients with more precise results as well as real-time data, but accountants are needed at least during technology development to adopt changing requirements and deliver useful technology. The power of data analytics to help accounting professionals maximize the consulting services provided by public accounting firms. Leveraging AI will also position external auditors to spend more time on appraisal, creative analysis, and financial advisory activities as workloads on technology are reduced. Finally, adopting AI can help analyze business behavior in competitive markets. There are inconsistencies in the results of previous studies in the AI area. The findings of previous research indicate that the role of auditors and also external auditors cannot be replaced by AI (Akhter and Sultana, 2018; Jarrahi, 2018; Greenman, 2017), although AI will play an important role in Replacing some audit and assurance tasks (Baldwin et al., 2006; Halal et al., 2017; Li and Zheng, 2018). Other studies also show that the role of auditor education and competence will significantly affect the readiness of auditors to survive in carrying out their duties in companies that have adopted AI (Stancheva-Todorova, 2018; Wessels, 2005). Based on previous studies using the literature review described above, the hypotheses of this research are:

Ha1: The higher the external auditor's understanding of AI technology, the higher the performance in carrying out the auditor's role.

2.6 Millennial auditor and AI technology

In Indonesia, there have been several previous studies that conducted research on millennial accountants/external auditors in AI studies. This previous research was conducted using a descriptive qualitative approach (Haryanto & Sudaryati, 2020; Handoyo & Anas, 2019; Denisiwara et al., 2020). The results of previous studies show that millennial accountants in the 4.0 revolution era are needed to adapt to technology (Haryanto & Sudaryati, 2020). The challenge for millennial accountants is that apart from
being able to use technology, they must always be updated to be able to use the latest (latest) technology in the form of software and other applications that help work in accordance with the demands of the times. The challenges they face. The premise put forward by previous researchers should be studied further in the form of empirical research to obtain research results that have higher external validity so that research findings on the issue of millennial auditors and AI technology can be generalized, especially in Indonesia (Deniswara et al., 2020).

Research investigating AI capabilities in age-difference respondents found that overall research respondents have a positive perception of AI and believe that understanding and working with AI will improve their job performance. Another interesting finding is that younger participants (millennials) and participants working in the Big 4 companies (and their affiliates) believe that AI will reduce regulatory oversight and improve their work environment. Another research examines and performs external audits of major competitors of Bing, using publicly available data from comScore. They found that younger users tend to have more satisfaction when working with search engines compared to older system users (Mehrotra, Anderson, Diaz, Sharma, Wallach, and Yilmaz, 2017). They also found something similar when both groups used a self-developed search engine. These findings suggest that the younger age group (millennials) are more prepared to work with machines.

Ha2: Millennial external auditors have a higher understanding of AI technology than non-millennial external auditors.

### 3 Research method

This study uses primary data whose respondents are heads of public accounting firms and external auditors who work in all public accounting firms in Indonesia. By using the google form application, the distribution of research instruments begins with the identification of contact persons obtained from the websites of each public accounting firm. This research instrument was developed using government regulations and previous research. The measurement of the role of external auditors uses the Law of the Republic of Indonesia Number 5 of 2011 concerning Public Accountants. This study measures the efficiency and accuracy (Mehrotra et al., 2017) of external auditors in carrying out their roles, and Artificial Intelligence (Zhang et al., 2020). Table 1 describes the research variables and their measurements. Electronic questionnaires were distributed to respondents for approximately six weeks. The responses collected were from 84 external auditors whose responses were recorded in a tabulated Google form. A total of 15 respondents are external auditors who are heads of public accounting firms, and 69 other respondents are external auditors as a partner. The answer is complete and fulfills the final respondent of this research.

**Table 1. Variable measurement.**
Millennial external auditors are external auditors aged between 20-40 years who currently work in public accounting firms. The Indonesian Central Statistics Agency, in its book entitled "Thematic Gender Statistics: Profile of the Indonesian Millennial Generation", explains that the millennial age limit in 2020 is between the ages of 20-40 years.

AI studies are varied and exciting. Previous studies conducted by many researchers showed the diversity of variables observed in the application of AI. The independent variable is routine work, while the dependent variable is AI progress and automation (Halal et al., 2017). Another study used the independent variable is Artificial Intelligence (AI) and the dependent variable is accounting and auditing issues (Akhter and Sultana, 2018); the independent variable is AI development in the industry, and the dependent variable is the number of jobs (Stancheva-Todorova, 2018); the independent variable is Artificial Intelligence (AI) and the dependent variable is humans in decision making (Jarrahi, 2018). Furthermore, in this study, the independent variable used is the external auditor’s understanding of AI (X1) in accounting and auditing, while the dependent variable is the performance of the external auditor in carrying out his/her role (Y). To provide a more in-depth analysis, this study uses the parameters of whether the respondents are from Public Accounting Firm affiliated with Big 4 (X2), education level (X3), and university origin (X4). In addition, this study also made observations on the age of the respondents.

This study uses seven Likert scales to measure AI understanding and the role of auditors. The middle-value option is omitted to provide confidence in each auditor’s understanding of AI (tends to be very weak or very strong). Multiple regression was used to process the data collected from the electronic questionnaire. The econometric model used is shown in the following equation.

\[ Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \epsilon \]

Y = The Role of Auditor
Big-4 affiliation
Level Educational background
The University from undergraduate education
error term
\( \alpha \) = Constant
\( \beta_1; \beta_2; \beta_3; \beta_4; \beta_5 \) = Coefficient
AI = Artificial Intelligence
MilAge = Millennial Age
Big4 = Big-4 affiliation
Edu Level = Level Educational background
Univ = The University from undergraduate education
ei = error term

4 Results and analysis

Because this study uses multiple regression analysis, it is necessary to test the normality of the data obtained from the respondents before conducting further analysis. The normality test that has been carried out produces data that is normally distributed. The validity test that has also been carried out on the variables results in that each indicator is valid by showing that each r value obtained from the calculation is higher than the r-table. Thus, it can be concluded that the research instrument used, namely the questionnaire, is considered valid to measure the variables studied in this study. Based on the electronic questionnaire to all public accounting firms which are registered in PPPK of the Ministry of Finance, Republic of Indonesia, 84 respondents as external auditors in Public Accounting Firm (PAF) were obtained with the details of the respondents as shown in Table 2.

<table>
<thead>
<tr>
<th>Status at PAF</th>
<th>Head of PAF</th>
<th>18%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partner</td>
<td>82%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>Millennial</th>
<th>53,60%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Millennial</td>
<td>46,40%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Big 4-affiliated</th>
<th>Yes</th>
<th>6%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>94%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Educational Level</th>
<th>S1</th>
<th>40,50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>S2</td>
<td>59,50%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>University of Origin</th>
<th>Top 10</th>
<th>34,50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Top 10</td>
<td>65,50%</td>
<td></td>
</tr>
</tbody>
</table>

The reliability test in this study used the Cronbach's Alpha method. The closer Cronbach's Alpha to 1, the higher the reliability of internal consistency. The test can be reliable if Cronbach's alpha >0.6 (Sekaran & Bougie, 2016, p. 227). The reliability test carried out for each variable resulted in Cronbach's alpha of each variable being higher than 0.6. Therefore, the research instrument used in this study, namely the questionnaire, can be reliable as a data collection tool and able to reveal actual information. The data in this study can also be analyzed further.

84 respondents consisted of 15 heads of public accounting firms, and 69 other respondents were auditors. 53.6% of respondents are considered millennial-aged accountants, and the remaining 46.4% of respondents are non-millennials. For questions related to big-4 affiliates, the results show that only 6% of respondents come from big-4 affiliate public accounting firms. For the education level of the respondents, 40.5% of the respondents had an undergraduate degree, and the remaining 59.5% had a master's degree. As for the respondents' universities at the undergraduate level, 34.5% came from the ten best universities in Indonesia, while the remaining 65.5% came from 10 non-top universities in Indonesia.

From the respondents' answers for the eleven questions regarding the respondents' understanding of AI technology, most respondents are familiar with and have a good understanding of the 11 accounting applications that support AI. However, for the applications they control, most are still Atlas and Microsoft Excel. As for the 11 questions related to the role of auditors, most of the respondents believe that their public accounting firm has provided and practiced efficient and accurate audit services for their clients. This answer shows that auditors can still provide good services to their clients even with adequate AI capabilities. This may be because most of the current
auditees have not used information technology in processing the company's financial statements. Table 3 describes the descriptive statistics of the variables used in the study.

Table 3 shows the auditor's understanding of AI is at 3.18 out of 7 (very good). None of the external auditors who became respondents in this study had an excellent understanding. Their maximum understanding was good (score 6). The questionnaire to measure AI uses a scale of 1 to 7, omitting a score of 4. Not including a score of 4 on a scale of 1-7 is to ask respondents to choose their tendency of understanding to be very poor or very good. The average value of 3.18 indicates that the respondents' understanding of AI is relatively poor.

<table>
<thead>
<tr>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1=Artificial Intelligence</td>
<td>84</td>
<td>1</td>
<td>6</td>
<td>3.18</td>
</tr>
<tr>
<td>X2=MiAge</td>
<td>84</td>
<td>1</td>
<td>2</td>
<td>1.54</td>
</tr>
<tr>
<td>X3=Big4 affiliation</td>
<td>84</td>
<td>1</td>
<td>2</td>
<td>1.06</td>
</tr>
<tr>
<td>X4=Edu_Level</td>
<td>84</td>
<td>1</td>
<td>2</td>
<td>1.60</td>
</tr>
<tr>
<td>X5=Univ_Origin</td>
<td>84</td>
<td>1</td>
<td>2</td>
<td>1.35</td>
</tr>
<tr>
<td>Y=The Role of Auditor</td>
<td>84</td>
<td>1</td>
<td>2</td>
<td>4.57</td>
</tr>
</tbody>
</table>

Source: Primary Data Collected (2021)

The millennial group dominated the auditors, who were the respondents of this study. Some of them are auditors working in public accounting firms with no affiliation with Big-4 public accounting firms. The educational degree of the respondents is mostly postgraduate but dominated by undergraduate graduates from non-top ten universities. The auditor's assignment score shows an average score of 4.57 out of a score of 7 (highly qualified). This value indicates the tendency of respondents to perceive that they can carry out their auditor duties with sufficient quality.

Table 4. Model summary.

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Change Statistics</th>
<th>R Square Change</th>
<th>F Change</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.352a</td>
<td>0.124</td>
<td>0.068</td>
<td>9.25874</td>
<td>0.124</td>
<td>2.211</td>
<td>0.049</td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), The University Origin, Big-4 affiliation, Educational level, Artificial Intelligence Expert.

Table 5. Regression test results.

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Const ant)</td>
<td>33.9</td>
<td>34</td>
<td>7.878</td>
<td>4.3</td>
</tr>
</tbody>
</table>

The regression test above explains the effect of the independent variables, namely Artificial Intelligence (X1), Affiliation in the Big-4 (X2), Education Level (X3), and University origin (X4), on the External Auditor's Role (Y). Because the significance value of the independent variable is greater than 0.05, the independent variable is considered to have no significant effect on the dependent variable. Thus, the results of the regression test illustrate that the variables Artificial Intelligence (X1), affiliation in the Big-4 (X2), and Education Level (X3) have a positive effect on the Auditor Role variable (Y) or improve auditor performance, but the impact is not significant. While the university origin (X4) has a negative effect on the dependent variable, the effect is also not significant on the dependent variable. The R-square value of 0.124 (see table 4) can be interpreted that the independent variable has a positive effect on the role of the auditor, but also found a significant value F. change is smaller than 0.05, which leads to the consideration that the independent variable is considered to have a relationship with the role of the external auditor.

Overall, the research model built in this study (Table 4) was considered fit with the sign value <5% (0.049). The first hypothesis assumes that the higher the external auditor's understanding of AI technology, the higher the performance in carrying out the auditor's role. The regression test results show that this study can be supported (see Table 5). This support is obtained from t-value = 1.867, Sign. = 0.041, and constant = 0.12 indicates that auditors who have a better understanding of high technology (AI) tend to carry out the role of auditors in their clients better, and vice versa. In addition, the correlation test results show that the relationship between understanding AI and the auditor's role is significant at the 0.01 level with a correlation value of 0.26. Both statistical test results (regression and correlation) showed consistent results, namely supporting the proposed hypothesis. This study supports research that finds that AI will hold the key to solving several audit task problems (Baldwin et al., 2006), which further requires collaboration between humans and machines by focusing on the comparative advantage of humans and machines (Jarrahi, 2018). Harmonization of respective strengths (human and machine) will result in collaboration that maximizes the work of auditors.

The second hypothesis assumes that millennial auditors have a higher understanding of AI technology than non-millennial external auditors. The correlation test results in table 5 show a correlation value of -0.124, and it is not significant. This value indicates that
millennial external auditors (25-40 years) have a lower understanding of AI compared to auditors aged > 40 years. In other words, the external auditor's understanding of AI cannot be judged by age. As auditors over the age of 40, they are also more proficient in AI because they have relatively long and large clients. So that senior auditors may already be familiar with various financial software when carrying out financial statement audits.

This study also provides several test results on additional variables such as affiliation to Big-4 public accounting firms, education level, and university origin. Public accounting firms that are not affiliated with Big4 have a higher understanding of AI than those affiliated (t-value = 1.486, Sign. = 0.141). This finding is surprising, and it is necessary to conduct a more in-depth investigation of the results showing that public accounting firms that are not affiliated with Big-4 have better AI capabilities than affiliates. Hopefully, the AI power possessed by non-affiliated Big-4 public accounting firm auditors is triggered to improve the institution's reputation or for other reasons.

A high level of education affects the external auditor's understanding of AI t-value = 1.431, Sign. = 0.156. The findings that are in line with the assumptions generally support previous research (Stancheva-Todorova, 2018; Wessels (2005), which explained that the role of education and auditor competence would greatly affect the readiness of auditors to survive in carrying out their duties in companies that have adopted AI. College origin showed no significance (0.607), and the relationship was negative (-0.517). These results (in Table 5) show that external auditors from non-top ten universities in Indonesia also have good AI skills. This study confirms many interesting findings in the world of external auditors and AI.

4.1 Correlational test

In addition, this study has also conducted a correlational test to observe the relationship between the independent variable and the dependent variable used in the study. The results of the correlational test can be seen in Table 6.

<table>
<thead>
<tr>
<th>AuditorRoles</th>
<th>Correlation Coefficient</th>
<th>Sig. (1-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>AuditorRoles</td>
<td>Correlation Coefficient</td>
<td>1.000</td>
<td>.261**</td>
</tr>
<tr>
<td>Gender</td>
<td>Correlation Coefficient</td>
<td>.100</td>
<td>.101</td>
</tr>
<tr>
<td>Age</td>
<td>Correlation Coefficient</td>
<td>-.140</td>
<td>-.124</td>
</tr>
<tr>
<td>Big4_Afi</td>
<td>Correlation Coefficient</td>
<td>-.085</td>
<td>-.277**</td>
</tr>
<tr>
<td>Edu_Level</td>
<td>Correlation Coefficient</td>
<td>-.147</td>
<td>-.281**</td>
</tr>
<tr>
<td>Univ_Origin</td>
<td>Correlation Coefficient</td>
<td>.091</td>
<td>.005</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (1-tailed).
* Correlation is significant at the 0.05 level (1-tailed).
Try to ensure that the size of the text in your figures is approximately the same size as the main text (10 point). Try to ensure that lines are no thinner than 0.25 point.

The correlational test results above show the relationship between understanding of AI and the role of external auditor, significant at the 0.01 level with a correlation value of 0.26. Both statistical test results (regression and correlation) showed consistent results. This research supports studies that have been conducted by previous researchers which predicts that AI will hold the key to solving some job problems in auditing (Baldwin et al., 2006). Furthermore, collaboration between humans and machines because harmonization of each force (human and machine) will result in the collaboration that maximizes the performance of external auditor and Public Accountants (Jarrahi’s, 2018).

In addition, the results of the correlational test also show a positive relationship between gender differences and the role of external auditor, at a significance level of 0.05 with a correlation value of 0.22. These results indicate that male external auditor understand the use of AI better than female external auditor. So, in this case, male external auditor are considered superior in carrying out their auditor roles compared to female external auditor. This finding can be caused by the majority of respondents coming from male external auditor, which is 74% of the total respondents. On the other hand, the results of this study are also in line with previous studies who found differences in the understanding and application of AI in their audit process across genders, which is also an exciting finding in their research (Mehrotra et al., 2017).

### 4.2 Observation of the age of external auditor on AI understanding

The following observation is regarding the age of the external auditor. Millennials are often assumed to have a higher understanding of AI technology than non-millennials. However, the correlation test results in the table above show a correlation value of -0.124, and it is not significant. This value indicates that millennial external auditor do not have a higher understanding of AI compared to Public Accountants aged > 40 years. In other words, the external auditor’s understanding of AI is not only judged by age but can also be based on the experience that has been passed.

As Public Accountants over the age of 40, they are considered to have more understanding of AI because they have relatively large and complex clients, so senior external auditor may be familiar with various accounting or auditing software when carrying out financial statement audits. However, such results can also be caused by the lack of scope of respondents in this study.

### 4.3 Additional variables observation

Furthermore, this study also provides several test results on additional variables such as affiliation with Big4 public accounting firms, education level, and university origin. External auditor from PAF that are not affiliated with Big4 public accounting firms are found to have a higher understanding of AI than those affiliated (t-value = 1.486; Sign = 0.141). This finding may be because respondents are dominated by public accounting firms that are not affiliated with Big4, so more respondents are needed from public accounting firms affiliated with Big4 so that the results of testing these additional variables are more accurate.

A high level of education affects the auditor's understanding of AI t-value = 1.431, Sign = 0.156. This finding is in line with the results of previous research, which explained that the role of education and competence of external auditor would greatly affect their readiness to survive in carrying out their duties in companies that have adopted AI (Stancheva and Todorova, 2018; Wessels, 2005). While the origin of the university did not show any significance (sign.0.607), and the relationship was negative (-0.517). These results show that external auditor from non-top ten universities in Indonesia can also have good AI skills.

### 5 Conclusions

The study found that more intelligent auditors with high technology (AI) tend to perform the auditor role on their clients better and vice versa. The regression results for testing the main variables of this study were strengthened by the results of the correlational test which showed a significant relationship between understanding AI and the role of the auditor. This research is successful in confirming that AI holds the key to solving some audit task problems. This study also provides empirical evidence that public accounting firms that are not affiliated with Big-4 have better AI capabilities than those that are affiliated. This may be driven by the desire to improve the reputation of the institution where they work, to increase their competitive advantage and the sustainability of the Public Accounting Firm in the future. In addition, based on the results of the correlation test, it was found that male Public Accountants were better able to carry out their auditor roles.

This study does not find millennial external auditor (aged 25-40 years) as a group of auditors who have a higher understanding of AI technology than non-millennial auditors (age >40 years). This finding indicates that external auditors’ understanding of AI cannot be judged by age. Auditors over the age of 40 are more proficient in AI compared to millennial external auditor. The results of this study also did not find any relationship between educators and accounting professionals regarding the application of AI. A high level of education has also been shown to influence external auditor’s understanding of AI. So that increasing the competence of external auditor regarding AI and preparing knowledge about AI for prospective external auditor needs attention.

The difficulty of getting respondents among external auditors is the main limitation of this study. In addition, the financial statement audit software, which is a proxy
for AI in this study, is used to measure the external auditor's understanding of AI in carrying out its duties as auditors, which is another limitation. Because there is a possibility that the software was never understood or found by the external auditor to conduct an audit. However, this limitation has been anticipated by providing an open answer to financial reporting software that is understood by the auditor. The research instrument is quite challenging, and respondents need time to understand the form of AI in question.

Respondents in this study tend to come from external auditors who are not affiliated with the Big-4. Further research needs to try to make the variance of respondents more balanced so that they can discover the other side of big-4 auditors understanding of AI.

Implications for regulators to ensure the understanding of external auditor (public accountant) in Indonesia on AI. Regulations that can direct external auditor to improve understanding of AI in carrying out their duties as auditors are urgently needed, especially now that Indonesia will implement a policy of preparing financial statements using the eXtensible Business Reporting Language (XBRL).

References