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# DIMENSIONS OF FRAUD PENTAGON AND ACADEMIC FRAUD MODERATED BY ARTIFICIAL INTELLIGENCE (A STUDY OF ACCOUNTING STUDENTS AT BRAWIJAYA UNIVERSITY)

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Abstract. This research aims to examine the effect of pentagon fraud dimensions (pressure, opportunity, rationalization, competence and arrogance) on the academic fraud committed by accounting students of Universitas Brawijaya, moderated by artificial intelligence. The samples include 310 respondents selected through purposive sampling, and the data are analyzed by the structural equation modeling-partial least squares (SEM-PLS) analysis. The research results exhibit that pressure, rationalization, and competence have a positive effect on academic fraud, suggesting that students commit academic fraud for being under high pressure, rationalizing academic fraud, and having competence in committing it. Opportunity and arrogance have no effect on academic fraud, meaning that opportunities and arrogance do not encourage students to commit academic fraud. Artificial intelligence is able to strengthen the effect of pressure and weaken the effect of rationalization on academic fraud. Artificial intelligence is one of the tools students use to commit academic fraud when under pressure. Under certain conditions, students do not rationalize the use of artificial intelligence as a form of academic fraud. Artificial intelligence is unable to moderate the effect of opportunity, competence, and arrogance on academic fraud. Students do not utilize artificial intelligence when they have the opportunity, competence, and arrogance as a form of academic fraud.

Keywords: academic fraud; fraud pentagon theory; artificial intelligence; students.

## I. INTRODUCTION

Fraud is an issue that is often encountered in social life. Fraud cases can occur in various professions, one of which is the accountant field. As an accountant, you should have high integrity because accountants have an important role in financial information. Fraud committed by accountants should not be taken lightly by policy makers in the world of education. Irianto (2003) argues that it is necessary to respond constructively to accounting education and improve moral competence in producing future accountants. According to Artani & Wetra (2017) the presence of accounting education is needed to respond constructively to fraudulent behavior in the professional world committed by an accountant.

Higher education is the key to education in shaping human resources so that they become professionals who have high quality and integrity. Students who graduate from college are required to have good professionalism, morals and ethics. However, in fact, in universities, cases often occur and are often found where students commit acts of fraud, namely academic fraud to get large grades (Nursani & Irianto, 2014). According to Artani (2018), academic fraud is a dishonest behavior in various ways to achieve the goal of getting high academic grades. Harding et al. (2004) suggests that an individual who commits acts of academic fraud in his youth can lead to unethical behavior in the world of work. According to McCabe et al. (2006), it is important to emphasize the understanding of academic fraud among students because students are future leaders.

In academia, there is a fraud triangle theory in the concept of fraud-examination, which was proposed in 1953 by Donald R. Cressey. This theory became the first theory in explaining the elements that cause fraud / fraud. This theory has 3 elements that cause fraud, namely pressure, opportunity, and rationalization, but this theory continues to be refined over time. Wolfe & Hermanson developed the Fraud triangle theory by adding the competency element to the fraud diamond theory in 2004. Fraud pentagon theory was developed by Marks (2012) from Crowe's previous fraud pentagon theory. According to Crowe, arrogance can be related to the perpetrator's belief that internal control is ineffective or does not burden them, so that the perpetrator feels able to carry out activities classified as fraud without fear of sanctions that may be received. This theory has been carried out by various studies in the field of fraud both in the business world and in the academic world.

Many researchers have conducted research on academic fraud in various countries. Irawan (2017) has conducted research using the dimensions of the fraud pentagon to assess academic fraud behavior among students. The study found that the variables of pressure, opportunity, rationalization, and ability had a positive and partially significant effect on academic fraud, while the arrogance variable had a negative and partially significant effect on this behavior. However, over time various new types of cheating have emerged along with technological developments. One form of technological progress is the emergence of artificial intelligence or commonly referred to as AI which stands for artificial intelligence.

The emergence of artificial intelligence technology is an advancement for human civilization because it can facilitate many jobs, but this becomes a problem when artificial intelligence is used as a tool for students to commit academic fraud. Manley (2023) asserts that the accessibility of essays, software for lagiarism, and other artificial intelligence-based resources have made it easy to lagiarism and create works that look as if they were originally created by students. According to Chan & Tsi (2023), educators whether teachers or lecturers should consider the potential long-term consequences of academic cheating reinforced by artificial intelligence on students' academic growth. The lack of literature related to artificial intelligence technology for its influence on academic cheating causes research in the field of artificial intelligence on academic cheating to be carried out so as to find empirical evidence that can support or strengthen the results of research that has been done before.

By conducting this research, this research is able to contribute to the world of education, especially on the issue of academic fraud, by empirically testing the fraud pentagon theory and can be used as a reference for similar research related to academic fraud to be further

developed. For practitioners, namely the S1 Accounting Study Program, Faculty of Economics and Business, Universitas Brawijaya, it is hoped that it can evaluate the making and implementation of policies or rules in the implementation of academic activities listed in the academic handbook or other academic regulations to reduce the possibility of academic fraud.

This study was conducted to examine the effect of each element of the fraud pentagon theory on academic fraud and to examine the role of artificial intelligence in moderating the effect of each element of the fraud pentagon theory on academic fraud.

## II. LITERATURE REVIEW

### *A. Academic Cheating*

Albrecht et al. (2012) defines fraud as a fraudulent activity in which a person or group intentionally does something that results in profit for the perpetrator and harm for the victim. According to Purnamasari & Irianto (2014), academic fraud is an action that describes the dishonest behavior of a student, both students and students in the academic realm in gaining benefits for academic success and causing injustice.

An act of academic fraud is carried out in various ways by the perpetrator in order to achieve his goals. A person can commit various kinds of academic fraud depending on the situation and conditions of the perpetrator such as plagiarism, cheating, collusion / inappropriate cooperation, carrying books during the exam, and searching for answers on the internet during the exam.

### *B. Fraud Pentagon Theory*

The more the times develop, the more diverse the fraud committed by someone. This is also accompanied by the development of theories found on fraud. The development of fraud theory includes the evolution of understanding of the things that can influence fraud and the development of more effective prevention and detection strategies. In 1953, Donald r. Cressey proposed the Fraud triangle theory which explains that there are three elements that influence an individual or group in committing fraud, namely pressure, opportunity, and rationalization.

Marks developed the fraud triangle theory into the fraud pentagon theory by adding two factors that encourage fraud in 2012. Marks added the elements of arrogance and competence as elements that have a role in influencing the behavior of an individual or group in committing fraud. According to Marks, competence is the development of the opportunity element where an individual's ability to control internal controls can benefit himself. While one other element, arrogance, is when a person feels confident about the inapplicability of a regulation and has a sense of superiority over himself.

Albrecht et al. (2012) define pressure as a situation in which a person is forced to do certain things, in this case academic cheating. Pressure can be felt by the perpetrator from various conditions, such as parental expectations, the surrounding environment, academic standards, and others. Nurkhin & Fachrurrozie (2018) defines pressure as a strong urge from someone in this case students and the surrounding environment to get certain benefits caused by the accumulation of tasks that must be completed.

Albrecht et al. (2012) defines opportunity as a situation in which a person feels confident that the person will not be detected cheating. Becker et. al, (2006) defines opportunity in

the act of academic fraud as a condition in which a person gets an exam answer from someone else who has an exam schedule in advance and has the potential to get the same question, the opportunity is also obtained by students when they see other students successfully committing academic fraud.

Albrecht et al. (2012) state that rationalization is self-defense by giving bad reasons for doing wrong actions. Chaplin (2011) defines rationalization as the process of justifying or giving reasons that can be justified to cover up the real reasons. Becker et al., (2006) provide an opinion where students rationalize the academic fraud they commit in a competition that creates injustice or the perpetrators have a belief that the academic fraud committed is still within the limits of socially acceptable reasonableness.

According to Nurkhin & Fachrurrozie (2018), competence is an ability that a person has in ignoring internal regulations or controls, strategizing in a hidden manner, and controlling social conditions and situations for his academic benefit. Competence is also defined by Marks (2012), as a person's ability to ignore internal controls, develop fraud plans by hiding, and control social conditions and situations to their advantage.

Arrogance is a behavior that shows superiority and greed in an individual who believes that he can be free from existing policies, regulations and internal controls (Marks, 2012) According to Nisa et al. (2019), arrogance is the behavior of a person who has the perception that regulations, company policies, internal controls, are not applicable to him so that the perpetrator "innocently" commits fraud. Achsin & Cahyaningtyas (2016), reveal that arrogance in a person will lead to a sense of superiority where the perpetrator feels able to commit fraud and can fight all controls.

### *C. Artificial Intelligence*

The emergence of artificial intelligence is a new challenge in the academic profession where in 2023 a large number of scientific articles were published to study the application of artificial intelligence in assisting students' writing efforts. Rich & Knight (1991) argue that artificial intelligence is a technology that helps computers or systems in performing certain tasks without human assistance and better than human-made.

Manley (2023) asserted that the accessibility of essays, paraphrasing software, and other artificial intelligence-based resources have made it easier to plagiarize and create works that appear to be created by students. Students have been made easier by artificial intelligence-powered tools that can make it easier for students to commit academic offenses (Crawford et al., 2023).

According to Alshater (2022), in academic and research activities, artificial intelligence can trigger several negative impacts as follows: ethical considerations, misuse, limited domain of knowledge, dependence on data quality, dependence on technology, and the limitations of artificial intelligence.

### *D. Research Framework*

Based on the problems described in the previous section, the researcher will develop several hypotheses to answer the research questions including.

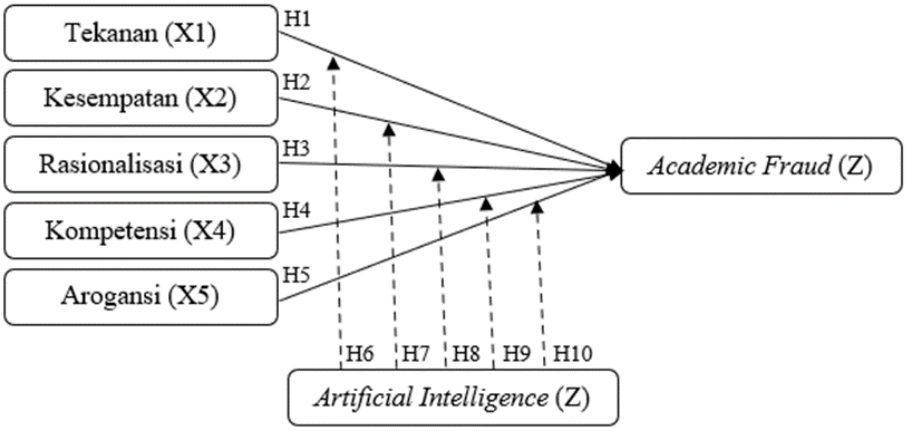


FIGURE 1. RESEARCH FRAMEWORK

*E. Hypothesis Development*

According to Albretch et al. (2012), the high pressure obtained by a person will follow the high possibility of someone committing fraud. Vice versa, the lower the pressure obtained by a person, the lower the possibility of someone committing fraud. According to research by Pratama et al. (2023), Sari (2022), Hardiana et al. (2021), Achmada et al. (2020), and Rafnhar & Muslimin (2022) pressure has a positive and significant effect on academic fraud. Based on this explanation, the following hypothesis can be formulated.

H1 : Pressure has a positive effect on academic fraud.

According to Albretch et al. (2012), the high opportunity obtained by someone will follow the high possibility of someone committing fraud. Vice versa, the lower the opportunity obtained by someone, the less likely someone will commit fraud. Based on the results of research conducted by Pratama et al. (2023), Sari (2022), Hardiana et al. (2021), and Achmada et al. (2020) opportunity has a positive effect on student academic fraud. Based on this explanation, the following hypothesis can be formulated:

H2 : Opportunity (opportunity) has a positive effect on academic fraud

According to Albretch et al. (2012), the high rationalization of a person will follow the high possibility of someone committing fraud. Vice versa, the lower a person's rationalization, the less likely a person is to commit fraud. According to Hardiana et al. (2021), rationalization is a strong reason for someone to defend or justify their academic cheating behavior. Several other studies such as Pratama et al. (2023), Sari (2022), Achmada (2020), Rafnhar & Muslimin (2022), and Kurniawan & Arif (2023), also show a similar thing where rationalization can have a positive and significant effect on student academic fraud. Based on this explanation, the following hypothesis can be formulated:

H3 : Rationalization (rationalization) has a positive effect on academic fraud

According to Marks (2012), the high competence of an individual in committing fraud can follow the high possibility of someone committing fraud. Vice versa, the lower the competence of an individual, the less likely someone is to commit fraud. The results of the research by Hardiana et al. (2021), Achmada et al. (2020), Sari (2022), Utami & Purnamasri (2021), and Kurniawan & Arif (2023) show that competence can have a positive effect on academic fraud. Based on this explanation, the following hypothesis can be formulated:

H4 : Competence has a positive effect on academic fraud.

According to Marks (2012), the high arrogance of a person will follow the high possibility of someone committing fraud. Vice versa, the lower a person's arrogance, the less likely someone will commit fraud. According to Hardiana et al. (2021), Kurniawati & Arif (2023), and Sari (2022), arrogance has a positive effect on academic fraud. Based on this explanation, the following hypothesis can be formulated:

H5 : Arrogance has a positive effect on academic fraud.

Artificial intelligence can assist humans in performing certain tasks and can even provide better results than human work (Rich & Knight, 1991). According to Mohammadkarimi's research (2023), lecturers recognize the benefits of artificial intelligence but still express concern about the impact of artificial intelligence technology on academic integrity. Lecturers think artificial intelligence can cause academic dishonesty and hinder skill development (Mohammadkarimi, 2023).

According to research conducted by Pratama et al. (2023), artificial intelligence strengthens the influence of pressure variables on academic dishonesty. This is because when students are under high pressure, students commit academic fraud in various ways, one of which is by using artificial intelligence. Pratama et al. (2023) revealed that artificial intelligence weakens the effect of opportunity on academic dishonesty. This is because when students have the opportunity to commit academic dishonesty, not all of them take advantage of the opportunity, but some students choose to take advantage of the opportunity to make artificial intelligence as additional knowledge before taking exams or assignments. Pratama et al. (2023) also revealed that artificial intelligence weakens the influence of competence on academic dishonesty. This is because not all students have the ability to use artificial intelligence as a tool to commit academic dishonesty, but there are also students who use artificial intelligence as learning material and increase their knowledge. Pratama et al. (2023) also showed that artificial intelligence is not able to moderate the effect of rationalization variables on academic dishonesty behavior. This is because students do not rationalize the use of artificial intelligence as a tool for academic fraud.

H6 : Artificial intelligence strengthens the influence of pressure on academic fraud.

H7 : Artificial intelligence weakens the influence of opportunity on academic fraud.

H8 : Artificial intelligence strengthens the influence of rationalization on academic fraud.

H9 : Artificial intelligence weakens the influence of competence on academic fraud.

H10 : Artificial intelligence strengthens the influence of arrogance on academic fraud.

## III. RESEARCH METHODOLOGY

### *A. Research Methods and Types*

Researchers used quantitative research methods by testing hypotheses (hypotesis testing) in this study. Quantitative research is a type of research that can provide findings through statistical procedures in quantified form (Sujarweni, 2021).

### *B. Population and Sample*

Sujarweni (2021) argues that population is all objects or subjects with characteristics that have been determined by researchers so that conclusions can be drawn. Researchers used active students of the Undergraduate Accounting Study Program, Faculty of Economics and Business, Universitas Brawijaya class of 2020, 2021, 2022, and 2023 as the research population. Brawijaya University entered the top 5 best universities in Indonesia in the field of accounting and finance in 2024 according to Quacquarelli Symonds World University Ranking (QS WUR) and Brawijaya University is a location close to the researcher so that it is the location chosen in this study. The population in this study amounted to 1301 students.

The sample can be interpreted as part of a characteristic in the population that has been determined by the researcher in the study (Sujarweni, 2021). This study uses purposive sampling where in determining the sample the researcher considers certain criteria (Sujarweni, 2021). Based on this definition, the sample to be used must meet the following criteria: (1) Class of 2020, 2021, 2022, and 2023 and (2) Have used artificial intelligence technology. Researchers use the Slovin formula in determining the minimum sample taken by researchers with a significance level of 5% with an error rate of 5% and a degree of confidence of 95% so that 306 minimum samples must be obtained.

*C. Data Type and Source*

The data used in this study are primary data types by distributing questionnaires to active students of the S1 Accounting Study Program, Faculty of Economics and Business, Universitas Brawijaya via e-mail and Google Form. Researchers used a Likert scale of 1 to 4 as a measurement scale using an interval scale.

*D. Research Variables*

The dependent variable used in this study is academic fraud (Y). Academic fraud according to Malgwi & Rakovski (2009) is a behavior carried out by a person or group with the aim of gaining an advantage through dishonest means such as plagiarism, cheating, and others. Indicators of measurement of academic fraud variables are (1) the perpetrator gives / gets cheating to his friend during an exam or individual assignment; (2) the perpetrator does not include the source of the quote; (3) the perpetrator brings a gadget / book during the exam as cheating behavior; (4) the perpetrator commits collusion / inappropriate cooperation.

This study uses fraud pentagon theory as an independent variable where fraud pentagon theory has 5 components in it, namely pressure (X1), opportunity (X2), rationalization (X3), competence (X4), and arrogance (X5).

Pressure (X1) is the urge to achieve goals but is limited by inability so that it encourages someone to commit fraud (Albrecht et al., 2012). Indicators of measurement of pressure variables are (1) dense activities outside of lectures; (2) demands of the social environment to achieve satisfactory results; (3) difficulty understanding lecture material; (4) a high competitive spirit within students.

Opportunity (X2) is a condition and situation in which a person allows fraud and avoids the possibility of being caught by others due to the fraud they commit (Albrecht et al., 2012). Indicators of measurement of opportunity variables are (1) lack of supervision over the prevention of fraud; (2) lack of whistle-blowers in the environment; (3) light sanctions given to fraudsters; (4) support for the environment that commits fraud.

Rationalization (X3) is the bravado of improper actions as a way of justifying fraudulent behavior (Albrecht et al., 2012). Indicators of measurement of rationalization variables are (1) fraud is something that has been taken for granted; (2) assume that fraudulent actions are carried out for good; (3) injustice in sanctioning fraudulent behavior; (4) being a response to a situation of urgency.

Competence (X4) is an ability that a person has in ignoring regulations or internal controls, strategizing in a hidden manner, and controlling social conditions and situations for his academic benefit (Marks, 2012). Indicators of measuring competency variables are (1) having equipment that supports fraud; (2) being able to operate sources of fraud; (3) having high confidence in fraud; (4) taking advantage of internal control deficiencies.

Arrogance (X5) is an attitude of superiority and greed that believes it can be free from policies, regulations, and internal controls on campus (Marks, 2012). Indicators of measurement of arrogance variables are (1) underestimating sanctions for cheating; (2) not accepting mistakes; (3) feeling that they have control in launching cheating actions; (4) underestimating supervisors, lecturers, or assessors.

This study uses moderating variables where the moderating variable used is artificial intelligence. Rich & Knight (1991) define artificial intelligence as a study or technology that makes computers or systems perform certain tasks without human assistance and better than human-made. Indicators of measurement of artificial intelligence variables are (1) the perpetrator gets faster results by using artificial intelligence; (2) the perpetrator is easier to commit fraud with artificial intelligence; (3) the perpetrator gets more satisfying results with artificial intelligence; (4) the perpetrator has no difficulty in using artificial intelligence.

### *E. Data Analysis Method*

After the data was obtained, the researcher tested quantitative data analysis techniques using the Partial Least Square (PLS) approach through the SmartPLS 4.0 application. Partial Least Square (PLS) is a Structural Equation Modeling (SEM) equation model on a variant or component basis. In the PLS-SEM model, path analysis has two subsections, namely the structural model or called the inner model and the measurement model or called the outer model (Ghozali and Latan, 2015). Outer model is done by testing discriminant validity, convergent validity, and reliability of each research indicator. Inner model is done by testing the coefficient of determination (r-square) and path coefficient. After these tests are carried out, the next test is hypothesis testing.

## IV. RESULT AND DISCUSSION

### *A. Respondent Characteristics*

Researchers have collected 310 respondents where all respondents stated that they had used *artificial intelligence* and were active students of the accounting study program in 2020, 2021, 2022, and 2023 so that they met the research criteria. This study uses the year of entering college, gender, average intensity of committing academic fraud in 1 month, and the *artificial intelligence* platform that has been used as the characteristics of respondents. Respondents can only choose 1 answer from each characteristic except the *artificial intelligence* platform that has been used.

Table 1. Class Year

| Class Year | Total | Percentage (100%) |
|---|---|---|
| 2020 | 81 | 26,13% |
| 2021 | 70 | 22,58% |
| 2022 | 73 | 23,55% |
| 2023 | 86 | 27,74% |
| Total | 310 | 100,00% |

Source: Primary Data Processing (2024)

Table 2. Respondent data based on gender

| Gender | Total | Percentage (100%) |
|---|---|---|
| Male | 107 | 34,52% |
| Female | 203 | 65,48% |
| Total | 310 | 100,00% |

Source: Primary Data Processing (2024)

Table 3. Respondent Data based on Average Intensity of Committing Academic Cheating in 1 Month

| Cheating Intensity | Total | Percentage (100%) |
|---|---|---|
| Never | 33 | 10,65% |
| 1-2 Times | 128 | 41,29% |
| 3-5 Times | 94 | 30,32% |
| 6-10 Times | 41 | 13,23% |
| > 10 Times | 14 | 4,52% |
| Total | 310 | 100,00% |

Source: Primary Data Processing (2024)

Table 4. Respondent Data based on *Artificial intelligence* Platforms that have been Used by Respondents

| AI Platform | Total | Percentage (100%) |
|---|---|---|
| ChatGPT | 33 | 87,42% |
| BingChat | 128 | 19,35% |
| Gemini | 94 | 24,84% |
| Humata AI | 41 | 14,84% |
| Perplexity AI | 14 | 35,81% |
| Other AI | 12 | 3,87% |
| Total Respondents | 310 | 100,00% |

Source: Primary Data Processing (2024)

*B. Data Analysis Results*

*OUTER MODEL TEST*

*Convergent Validity Test*

Convergent validity tests can be analyzed from the *outer loading* value where the recommended *outer loading* value is 0.6 or more (Hair *et al*., 2017).

Table 5. *Outer Loading*

| Item | Variables | Value | Ket. |
|---|---|---|---|
| X1.1 - X1.6 | Pressure | 0.621 - 0.777 | Valid |
| X2.1 - X2.6 | Opportunity | 0.722 - 0.764 | Valid |
| X3.1 - X3.6 | Rationalization | 0.646 - 0.832 | Valid |
| X4.1 - X4.6 | Competence | 0.730 - 0.814 | Valid |
| X5.1 - X5.6 | Arrogance | 0.725 - 0.819 | Valid |
| Y.1 - Y.6 | *Academic fraud* | 0.678 - 0.840 | Valid |
| Z.1 - Z.6 | *Artificial intelligence* | 0.678 - 0.841 | Valid |

Source: Data processed with SmartPLS (2024)

Based on table 5, it can be seen that all indicators or statement items have met the requirements for testing the *outer loading* value so that each indicator can be declared valid and can be used to measure each latent variable. In addition to the *outer loading value,* convergent validity testing must also look at the *average variance extracted* (AVE) value on *construct reliability* and *validity*. To be considered valid, a variable must have an AVE value above 0.5. (Hair *et al*., 2017)

Table 6. *Average Variance Extracted*

| Variables | Value | Description |
|---|---|---|
| Pressure | 0.504 | Valid |
| Opportunity | 0.546 | Valid |
| Rationalization | 0.538 | Valid |
| Competence | 0.583 | Valid |
| Arrogance | 0.600 | Valid |
| *Academic fraud* | 0.553 | Valid |
| *Artificial intelligence* | 0.568 | Valid |

Source: Data processed with SmartPLS (2024)

Based on table 6, it can be concluded that each variable has an AVE value above 0.5 so that it can be declared to have good convergent validity.

*Discriminant Validity Test*

*Discriminant validity* testing is carried out to measure each variable in the research conceptual model. According to Wong (2019), the discriminant validity test can determine the correlation between constants in the model called *cross loading*. The discriminant

validity test can be said to be good if the AVE root in each construct is greater than the correlation between constructs and other constructs and the AVE value in each variable is more than 0.5. Based on the tests that have been carried out, each item on the research variables has a value of more than 0.5 and has a *cross loading* value that is greater than the items on other variables.

*Reliability Test*

The reliability test was conducted by measuring *Cronbach's Alpha* and *Composite Reliability* (Dijkstra & Henseler, 2015). The reliability test is carried out to measure the lower limit of the structure's trust value. According to Henseler *et al.* (2016), in reliability testing, the consistency of the determinant is obtained if *Cronbach's Alpha* (CA) has a value equal to or more than 0.5 so that the determinant is acceptable. To be able to state that *Composite Reliability* (CR) is acceptable, the *Composite Reliability* value must have a value equal to or more than 0.7 (Hair *et al.,* 2012; Henseler *et al.*, 2015).

Table 7. *Cronbach's Alpha* and *Composite Reliability*

| Variables | CA | CR | Ket. |
|---|---|---|---|
| Pressure | 0.802 | 0.859 | Reliable |
| Opportunity | 0.835 | 0.878 | Reliable |
| Rationalization | 0.826 | 0.874 | Reliable |
| Competence | 0.857 | 0.893 | Reliable |
| Arrogance | 0.868 | 0.900 | Reliable |
| *Academic fraud* | 0.837 | 0.881 | Reliable |
| *Artificial intelligence* | 0.847 | 0.887 | Reliable |

Source: Data processed with SmartPLS (2024)

Table 7 shows that the *Cronbach's Alpha* value in each construct in this study has a value above 0.5 reflecting an acceptable determinant and has an acceptable *Composite Reliability* value of above 0.7. Thus it can be concluded that all constructs in this study are acceptable in their reliability and are declared reliable.

*INNER MODEL TEST*

*Structural Model Evaluation*

Structural capital or *inner model* is a model that can measure the accuracy of the relationship between latent variables. Measurement of this *inner model* is done by looking at the *coefficient of determination* value or it can be said to be the *R-Square* test. *R-Square* testing is carried out to determine the accuracy of predicting how influential the combination of independent variables is on the dependent variable.

Table 8. *R-Square* Testing

| | *R-Square* | *Adjusted R-Square* |
|---|---|---|

| | | |
|---|---|---|
| *Academic fraud* | 0.763 | 0.754 |

Source: Data processed with SmartPLS (2024)

Based on table 8, in this study, the *Adjusted R-Square* is 0.754, which means that the variation in the *academic fraud* variable has been explained by the regression model by 75.4%. Thus, 24.6% of the remainder is explained by other variables outside of this research model.

*C. Hypothesis Testing*

In hypothesis testing, there are several criteria that must be met including the *original sample*, *t-statistics*, and *p-value*. the *original sample* value close to +1 indicates a strong positive relationship and the *original sample* value of -1 indicates a strong negative relationship. *The t-statistic* aims to determine the significance value between variables in the study. The hypothesis is accepted if the *t-statistic* value is greater than 1.64, while if the *t-statistic* value is less than 1.64, the hypothesis is rejected or the null hypothesis is accepted (Hair *et al.*, 2017). Meanwhile, *p-values* measure the influence on the dependent variable. To accept the hypothesis, the *p-value* must show a value less than 0.05 or 5%.

Table 9. *Path Coefficient*

| Model | *Original sample* (O) | *Standard Deviations* (STDEV) | *T-statistics* (\|O/STDEV\|) | *P-values* | Description |
|---|---|---|---|---|---|
| Pressure→ *Academic fraud* | 0.179 | 0.060 | 2.985 | 0.003 | H1 Accepted |
| Opportunity→ *Academic fraud* | 0.066 | 0.053 | 1.249 | 0.212 | H2 Rejected |
| Rationalization→ *Academic fraud* | 0.322 | 0.061 | 5.295 | 0.000 | H3 Accepted |
| Competence→ *Academic fraud* | 0.180 | 0.061 | 2.939 | 0.003 | H4 Accepted |
| Arrogance→ *Academic fraud* | 0.019 | 0.055 | 0.349 | 0.727 | H5 Rejected |
| *Artificial intelligence* x Pressure→ *Academic fraud* | 0.192 | 0.057 | 3.689 | 0.000 | H6 Accepted |
| *Artificial intelligence* x Opportunity→ *Academic fraud* | 0.043 | 0.053 | 0.834 | 0.404 | H7 Rejected |
| *Artificial intelligence* x Rationalization→ *Academic fraud* | -0.145 | 0.052 | 2.662 | 0.008 | H8 Rejected |
| *Artificial intelligence* x Competence→ *Academic fraud* | -0.067 | 0.052 | 1.251 | 0.211 | H9 Rejected |
| *Artificial intelligence* x Arrogance→ *Academic fraud* | -0.016 | 0.054 | 0.279 | 0.780 | H10 Rejected |

Source: Data processed with SmartPLS (2024)

Based on table 9, it can be seen that it can be seen that *pressure* and *academic fraud* have a positive *original sample* value of 0.179 with a *t-statistic* value of 2.985 and a *p-value* of 0.003, so H1 is accepted. This means that *pressure* has a positive effect on *academic fraud*.
*Opportunity* and *academic fraud* have a positive *original sample* value of 0.066 with a *t-statistic* value of 1.249 and a *p-value* of 0.212, so H2 is rejected. This means that *opportunity* has no effect on *academic fraud*.
*Rationalization* and *academic fraud* have a positive *original sample* value of 0.322 with a *t-statistic* value of 5.295 and a *p-value* of 0.000, so H3 is accepted. This means that *rationalization* has a positive effect on *academic fraud*.
*Competence* and *academic fraud* have a positive *original sample* value of 0.180 with a *t-statistic* value of 2.939 and a *p-value* of 0.003, so H4 is accepted. This means that competence (*competence*) has a positive effect on *academic fraud*.
*Arrogance and academic fraud* have a positive *original sample* value of 0.019 with a *t-statistic* value of 0.349 and a *p-value* of 0.727, so H5 is rejected. This means that *arrogance* has no effect on *academic fraud*.
*Pressure* and *academic fraud* with *artificial intelligence* as a moderating variable have a positive *original sample* value of 0.192 with a *t-statistic* value of 3.689 and a *p-value* of 0.000, so H6 is accepted. This means that *artificial intelligence* strengthens the effect of *pressure* on *academic fraud*.
*Opportunity* and *academic fraud* with *artificial intelligence* as a moderating variable have a positive *original sample* value of 0.043 with a *t-statistic* value of 0.834 and a *p-value* of 0.404, so H7 is rejected. This means that *artificial intelligence* is unable to moderate *opportunity* on *academic fraud*.
*Rationalization* and *academic fraud* with *artificial intelligence* as a moderating variable have a negative *original sample* value of -0.145 with a *t-statistic* value of 2.662 and a *p-value* of 0.008, so H8 is rejected. This means that *artificial intelligence* weakens the effect of *rationalization* on *academic fraud*.
*Competence* and *academic fraud* with *artificial intelligence* as a moderating variable have a negative *original sample* value of 0.067 with a *t-statistic* value of 1.251 and a *p-value* of 0.211, so H9 is rejected. This means that *artificial intelligence* is unable to moderate *competence* on *academic fraud*.
*Arrogance* and *academic fraud* with *artificial intelligence* as a moderating variable have a negative *original sample* value of 0.016 with a *t-statistic* value of 0.279 and a *p-value* of 0.780, so H10 is rejected. This means that *artificial intelligence* is unable to moderate *arrogance* on *academic fraud*.

## *D. RELATIONSHIP BETWEEN VARIABLES*

### *1. The Effect of Pressure on Academic Fraud*

Based on the tests conducted, *pressure* has a positive effect on student *academic fraud* so that H1 is accepted. This statement supports Marks' (2012) *fraud pentagon* theory in which pressure is a driving factor for someone to commit fraud. The results obtained in this study are consistent with previous research conducted by Achmada *et al.* (2020), Rafnhar & Muslimin (2022), Pratama *et al.* (2023), Sari (2022), and Hariana *et al.* (2021) where in this study the pressure variable is a variable that has a positive influence on the occurrence of academic

fraud. However, the results of this study contradict research conducted by Kurniawati & Arif (2023) where in that study the pressure variable had no effect on academic fraud. Based on the results that have been obtained, it can be interpreted that students commit academic fraud influenced by pressure from the social environment to achieve satisfactory results, pressure from the density of activities outside of lectures, pressure from within students who have high competitiveness, and pressure in difficulty understanding lecture material.

*2. The Effect of Opportunity on Academic Fraud*

Based on the tests conducted, *opportunity* has no effect on student *academic fraud* behavior so that H2 is rejected. This statement opposes Marks' (2012) statement on the *fraud pentagon theory* in which *opportunity* is a driving factor for someone to commit fraud. The results of this study also contradict research conducted by Pratama *et al.* (2023), Sari (2022), and Hariana *et al.* (2021) where in these studies the opportunity variable became a variable that influenced the occurrence of academic fraud. The results obtained in this study are in line with previous research conducted by Utami & Purnamasari (2021), Rafnhar & Muslimin (2022), and Kurniawan & Arif (2023) where the opportunity variable does not influence the occurrence of academic fraud. Utami & Purnamasari (2021) state that an effective control system can make it difficult for students to commit academic fraud. Based on the results that have been obtained, it can be interpreted that the high or low opportunities that students have with the lack of supervision over the prevention of fraud, the lack of *whistleblowers* in their environment, the leniency of sanctions given to fraudsters, and support for the environment that commits fraud are unable to make students commit academic fraud. This can be caused by some students using their opportunities, some students do not take advantage of the opportunities they have, some students also commit academic fraud even though the opportunities they have are small, and some students do not commit academic fraud because of the lack of opportunities they have. The effective control system imposed by the campus also makes it difficult for students to commit academic fraud. The inconsistency of the assertiveness imposed by the campus regarding the prevention and discovery of academic fraud is seen from the respondents' unstable answers where some students feel that campus policies are good enough, but some students also feel that campus policies and campus supervision have not been maximally implemented.

*3. The Effect of Rationalization on Academic Fraud*

Based on the tests conducted, *rationalization* has a positive effect on *academic fraud* behavior. This statement supports Marks' (2012) statement on the *fraud pentagon theory* in which *rationalization* is a driving factor for someone to commit fraud. This study obtained consistent results with research conducted by Pratama *et al.* (2023), Sari (2022), Hariana *et al.* (2021), Achmada *et al.* (2020), Rafnhar & Muslimin (2022), and Kurniawati & Arif (2023) where in these studies the rationalization variable is a variable that has a positive influence on the occurrence of academic fraud. However, the results of this study contradict the research of Utami & Purnamasari (2021) where in that study the rationalization variable did not have an influence on the occurrence of academic fraud. Based on the results obtained, it can be interpreted that students commit academic fraud influenced by their rationalization which considers that cheating is a common thing, assumes that cheating is done for the good of themselves and their friends, rationalizes the injustice in sanctioning cheating, and makes academic fraud a response to an urgent situation.

*4. The Effect of Competence on Academic Fraud*

Based on the tests carried out, *competence* has a positive effect on *academic fraud* behavior. This statement supports Marks' (2012) statement on the *fraud pentagon theory* in which *competence* is a driving factor for someone to commit fraud. This study obtained consistent results with research conducted by Pratama *et al.* (2023), Sari (2022), Hariana *et al.* (2021), Achmada *et al.* (2020), Rafnhar & Muslimin (2022), Utami & Purnamasari (2021), and Kurniawati & Arif (2023) where in this study the competency variable is a variable that has a positive effect on academic fraud. Based on the results obtained, it can be interpreted that students commit academic fraud influenced by student competence by having supporting equipment to commit fraud, the ability to operationalize sources of fraud, having high confidence in fraud, and being able to take advantage of campus internal control deficiencies.

*5. The Effect of Arrogance on Academic Fraud*

Based on the tests conducted, *arrogance* has no effect on *academic fraud* behavior. This statement opposes Marks' (2012) statement on the *fraud pentagon theory* in which *arrogance* is a driving factor for someone to commit fraud. The results of this study also contradict research conducted by Sari (2022), Hariana *et al.* (2021), and Kurniawati & Arif (2023) where in these studies the arrogance variable has a positive effect on the occurrence of academic fraud. This study obtained results that were consistent with previous research conducted by Utami & Purnamasari (2021), Achmada *et al.* (2020), Mushin *et al.* (2018), and Rafnhar & Muslimin (2022) where in this study the arrogance variable is a variable that does not influence the occurrence of academic fraud. According to Mushin *et al.* (2018), arrogance has no effect on academic fraud because students tend to have low arrogance. Based on the results obtained, it can be interpreted that arrogance such as underestimating sanctions for cheating, not accepting mistakes, feeling that they have obstacles in launching cheating actions, and underestimating exam supervisors and lecturers in preventing and detecting cheating behavior cannot influence students in committing academic fraud. This can be caused when students underestimate the applicable campus policies, some students commit academic fraud and some still do not commit academic fraud and when students are afraid of the policies and sanctions that will be given by the campus to perpetrators of academic fraud, it is not certain that these students will not commit academic fraud.

*6. The Effect of Pressure on Academic Fraud with Artificial Intelligence as a Moderating Variable*

Based on the tests conducted, *artificial intelligence* strengthens the influence of *pressure* on *academic fraud.* This study obtained results that are consistent with the research of Pratama *et al.* (2023) which states that in this study the *artificial intelligence* variable strengthens the effect of *pressure* on academic fraud. Based on the results obtained, it can be interpreted that when students are under high pressure, students will commit various academic fraud in order to get satisfactory results in assignments or during exams, including using *artificial intelligence*.

*7. The Effect of Opportunity on Academic Fraud with Artificial Intelligence as a Moderating Variable*

Based on the tests conducted, *artificial intelligence* is unable to moderate the effect of *opportunity* on *academic fraud*. The results obtained in this study are not in line with the research of Pratama *et al.* (2023) which states that *artificial intelligence* variables weaken the effect of *opportunity* on academic fraud. Based on the results obtained, it can be interpreted that students do not utilize *artificial intelligence* when they have the opportunity to commit academic fraud. This happens because there are still many students who continue to use the

old way when committing academic fraud such as using small notes rather than bringing gadgets to open sites that have *artificial intelligence* technology.

8. *The Effect of Rationalization on Academic Fraud with Artificial Intelligence as a Moderating Variable*

Based on the tests conducted, *artificial intelligence* weakens the effect of *rationalization* on *academic fraud*. The results obtained in this study are not in line with the research of Pratama *et al.* (2023) which states that *artificial intelligence* variables cannot moderate the effect of *rationalization* on academic fraud. Based on the results obtained, it can be interpreted that students do not rationalize the use of *artificial intelligence* in committing academic fraud.

9. *The Effect of Competence on Academic Fraud with Artificial Intelligence as a Moderating Variable*

Based on the tests carried out, *artificial intelligence is* unable to moderate the effect of *competence* on *academic fraud*. The results obtained in this study are not in line with the research of Pratama *et al.* (2023) which states that *artificial intelligence* variables weaken the effect of ability on academic fraud. Based on the results obtained, it can be interpreted that students do not utilize *artificial intelligence* when they have the ability to commit academic fraud using *artificial intelligence*. This can happen because there are still many students who are not sure of the answers given by *artificial intelligence* so they prefer to bring small notes from the summary of the lecture material book.

10. *The Effect of Arrogance on Academic Fraud with Artificial Intelligence as a Moderating Variable*

Based on the tests conducted, *artificial intelligence* is unable to moderate the effect of *arrogance* on *academic fraud*. Based on the results obtained , it can be interpreted that students do not utilize *artificial intelligence* even though they have arrogance to commit academic fraud. This can happen because even though students are not afraid of the sanctions given, these students do not use *artificial intelligence* as a means of committing academic fraud.

## V. CONCLUSION

This study was conducted to determine the effect of the dimensions of the fraud pentagon on academic fraud of accounting students at Universitas Brawijaya with artificial intelligence as a moderating variable. This research was conducted on accounting students at Universitas Brawijaya with purposive sampling which has various specific respondent criteria as its sampling technique.

The results of this study indicate that the variables of pressure, rationalization, and competence have a positive effect on academic fraud of accounting students at Brawijaya University. This can be interpreted as the higher the level of pressure, rationalization, or competence possessed by students, the higher the tendency of students to commit academic fraud.

Opportunity has no effect on academic fraud of accounting students at Brawijaya University, which means that the high or low opportunities owned by students in committing academic fraud are not able to influence the tendency of students to commit academic fraud. This can occur because campus policies are sometimes not strictly implemented, such as some students feel that the exam supervisor has done his job properly and some students disagree, even so, not all students also take advantage of the opportunities owned by these students.

Arrogance also has no effect on academic fraud of accounting students at Universitas Brawijaya, which means that high or low student arrogance does not affect the tendency of students to commit academic fraud. This can happen because even though students are afraid of the applicable rules and sanctions, some students still commit academic fraud, as well as students who underestimate the applicable rules and sanctions, some students also continue to commit academic fraud.

Artificial intelligence strengthens the effect of pressure on academic fraud of accounting students at Brawijaya University. This means that when students have pressure, students tend to commit academic fraud in various ways, one of which is by using artificial intelligence because artificial intelligence is considered capable of providing faster answers. Artificial intelligence actually weakens the influence of rationalization on academic fraud of accounting students at Universitas Brawijaya, which means that under certain conditions students do not rationalize the use of artificial intelligence in committing academic fraud.

Artificial intelligence is unable to moderate opportunity, competence, and arrogance on academic fraud of accounting students at Universitas Brawijaya. This can be interpreted that students do not utilize artificial intelligence when they have the opportunity to commit academic fraud. Students also do not utilize artificial intelligence when they have the competence to commit academic fraud by using artificial intelligence. Students also do not utilize artificial intelligence even though they have the arrogance to commit academic fraud.

Based on the research that has been conducted, of course there are suggestions that can be used for input in further research where further research can use independent variables with other fraud theories such as fraud hexagon theory or add religiosity variables as independent variables that can affect academic fraud. For students, it is hoped that they can use artificial intelligence technology as a means of learning but still check the correctness of the answers given by artificial intelligence technology and not use artificial intelligence as a means of academic fraud.

This study has empirically tested Marks' (2012) fraud pentagon theory where pressure, rationalization, and competence in the fraud pentagon are proven to have an effect on academic fraud but this research is not in line with Marks' (2012) fraud pentagon theory where opportunity and arrogance have no effect on academic fraud. This research can add to the literacy or reference of further research both related to academic fraud and artificial intelligence.

The implications of the results of this study are very important for regulators and academic policy makers as evaluation material for regulators in making policies that can put pressure on students and enforce policies that can make it difficult for students to commit academic fraud so that even though students have the competence to commit fraud, it can be prevented by effective control. This research can be used as material for evaluating campus policies related to the prevention and follow-up of academic fraud behavior committed by students.

Based on the research that has been conducted, of course in its implementation it has limitations in which there have not been many found uses of artificial intelligence variables as moderating variables to test the academic fraud variable as the dependent variable so that there are not many references to previous research that tests these moderating variables and this study has not examined the effect of one's religious degree on academic fraud.

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REFERENCES

Achmada, T., Ghozali, I., & Pamungkas, I. D. (2020). Detection of Academic Dishonesty: A Perspective of the Fraud pentagon Model. International Journal of Innovation, Creativity and Change, 13(12), 266-282.

Achsin, M. & Cahyaningtyas, R. I. (2016). Studi Fenomenologi Kecurangan Mahasiswa dalam Pelaporan Pertanggungjawaban Dana Kegiatan Mahasiswa: Sebuah Realita dan Pengakuan. Journal of Chemical Information and Modeling, 53(9), 1689–1699.

Albrecht, W. S., Albrecht, C. O., Albrecht, C. C., & Zimbelman, M. F. (2012). Fraud Examination. Boston USA: Cengage Learning.

Alshater, M. M. (2022). Exploring the Role of Artificial intelligence in Enhancing Academic Performance: A Case Study of ChatGPT. Diakses dari https://ssrn.com/abstract=4312358

Artani, K. T. B., & Wetra, I. W. (2017). Academic self efficacy and fraud diamond. Riset Akuntansi, 7(2), 123–132.

Artani, K. T. B. (2018). Academic fraud Behaviour Among Students in Accounting Diploma Program: An Empirical Study in Bali. KnE Social Sciences, 3(11), 37.

Becker, D., Coonoly, J., Paula, L., & Morrison, J. (2006). Using the Business Fraud Triangle to Predict Academic Dishonesty Among Business Students. Academy of Educational Leadership Journal, 10(1), 37.

Chan, C. K. Y., & Tsi, L. H. (2023). The AI revolution in education: Will AI replace or assist teachers in higher education?. arXiv preprint arXiv:2305.01185. Diakses dari https://doi.org/10.48550/arXiv.2305.01185

Crawford, J., Cowling, M., & Allen, K. A. (2023). Leadership is needed for ethical ChatGPT: Character, assessment, and learning using artificial intelligence (AI). Journal of University Teaching & Learning Practice, 20(3), 02.

Dijkstra, T. K., & Henseler, J. (2015). Consistent Partial Least Squares Path Modeling. Management Information Systems Research Center, University of Minnesota, 39(2), 297–316.

Ghozali, I., & Latan, H. (2015). Partial Least Squares Konsep Teknik, dan Aplikasi Menggunakan Program SmartPLS 3.0 Untuk Penelitian Empiris. Semarang: Badan Penerbit Universitas Diponegoro.

Hair, J. F. J., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2017). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) (2nd ed.). Los Angeles: Sage Publication.

Hair, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. European Business Review, 26(2), 106–121. Diakses dari https://www.emerald.com/insight/content/doi/10.1108/EBR-10-2013-0128/full/html

Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. Journal of the Academy

of Marketing Science, 40(3), 414–433. Diakses dari https://link.springer.com/article/10.1007/s11747-011-0261-6

Hardiana, R. D., Lhutfi, I., & Mardiani, R. (2021). Fraud pentagon Model: Predicting Student's Cheating Academic Behavior. Jurnal Aset (Akuntansi Riset), 13(2), 234-248.

Harding, T. S., Carpenter, D., Cynthia, F., J. & Passow, H. J. (2004). Does Academic Dishonesty Relate to Unethical Behavior in Professional Practice? An Exploratory Study. Science and Engineering Ethics. 10(2), 311-324.

Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS Path Modeling In New Technology Research: Updated Guidelines. Industrial Management and Data Systems, 116(1), 2–20.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the Academy of Marketing Science, 43(1), 115–135.

Irianto, G. (2003). Skandal Korporasi dan Akuntan. Lintasan Ekonomi, 20(2), 104-113.

Kurniawati, A. & Arif, A. (2023). Pengaruh Fraud pentagon Dan Penyalahgunaan Teknologi Informasi Terhadap Perilaku Kecurangan akdemik (Studi Pada Mahasiswa Fakultas Ekonomi dan Bisnis Perguruan Tinggi di Jakarta). Jurnal Ekonomi Trisakti, 3(1), 1669-1678.

Malgwi, C. A. & Rakovski, C. C. (2009). Combating academic fraud: Are students reticent about uncovering the covert? Journal Academic Ethic. 7, 207-221.

Manley, S. (2023). The use of text-matching software's similarity scores. Accountability in Research, 30(4), 219-245.

Marks, J. (2012). The mind behind the fraudsters crime: Key behavioral and environmental elements. Crowe Horwath LLP, 62. Diakses dari http://www.fraudconference.com/uploadedFiles/Fraud_Conference/Content/CourseMaterials/presentations/23rd/ppt/10C-Jonathan-Marks.pdf

McCabe, D. L., Butterfield, K. D., & Trevino, L. K. (2006). Academic Dishonesty in Graduate Business Program: Prevalence, Causes, and Proposed Action. Academy of Management Learning & Education, 5(3), 294-305.

Mohammadkarimi, E. (2023). Teachers' reflections on academic dishonesty in EFL students' writings in the era of artificial intelligence. Journal of Applied Learning & Teaching, 6(2), 1-9.

Mushin, Kardoyo, Arief, S., Nurkhin, A., Pramusinto, H. (2018). An Analyis of Student's Academic fraud Behavior. International Conference on Learning Innovation, 164, 34-38.

Nisa, K., Oktafiana, N. F., & Sari, S. P. (2019). Fraudulent financial statement ditinjau dari model fraud pentagon Horwath. The 9th University Research Colloqium, 164–177.

Nurkhin, A., & Fachrurrozie. (2018). Analisis Pengaruh Dimensi Fraud Diamond Terhadap Perilaku Kecurangan Akademik Mahasiswa Pendidikan Akuntansi UNNES. Liabilities Jurnal Pendidikan Akuntansi, 1(1), 1–12.

Nursani, R., & Irianto, G. (2014). Perilaku Kecurangan Akademik Mahasiswa: Dimensi Fraud Diamond. Jurnal Ilmiah Mahasiswa Fakultas Ekonomi dan Bisnis Universitas Brawijaya, 2(2), 1-21.

Pratama, R. D., Sangka, K. B., & Nugroho, J. A. (2023). The Influence of fraud Diamond Perspective and Artificial intelligence Factors on Academic Fishonesty Indonesian College

Student. International Journal of Multicultural and Multireligious Understanding. 10(11), 164-175. Diakses dari http://dx.doi.org/10.18415/ijmmu.v10i11.5248

Purnamasari, D., & Irianto, G. (2014). Analisis Pengaruh Dimensi Fraud Triangle Terhadap Perilaku Kecurangan Akademik Mahasiswa Pada Saat Ujian Dan Metode Pencegahannya. Jurnal Ilmiah Mahasiswa Fakultas Ekonomi dan Universitas Brawijaya, 2(2).

Rafnhar, R. & Muslimin (2022). The Effect of Academic fraud Dimensions of Fraud pentagon's Accounting Students. Jurnal Akuntansi, Audit, dan Sistem Informasi Akuntansi, 6(1), 122-134.

Rich, E., & Knight, K. (1991). Artificial intelligence. New York : McGraw-Hill.

Sari, D. (2022). Fraud pentagon Model Terhadap Academic fraud Dan Spiritualitas Sebagai Varibel Moderasi. Jurnal Ekonomi, Keuangan dan Bisnis, 7 (1), 85-93.

Sujarweni, V. W. (2022). Metodologi Penelitian. Yogyakarta : PT. Pustaka Baru.

Utami, D. P. W., & Purnamasari, D. I. (2021). The impact of ethics and fraud pentagon theory on academic fraud behavior. Journal of Business and Information Systems, 3(1), 49–59.

Wong, K. K. K. (2019). Mastering partial least squares structural equation modeling (PLS-SEM) with SmartPLS in 38 Hours. Bloomington: IUniverse