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Using Artificial Intelligence can increase academic fraud in Generation Z

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ARTICLE INFO	ABSTRACT
	Academic fraud, including cheating and the use of jockey services, has become a major issue in Indonesian higher education. This study aims to examine the influence of the five elements of the Fraud Pentagon Theory: pressure, opportunity, rationalization, competence, and arrogance, alongside religiosity on students' inclination to engage in academic fraud. This study examines the moderating influence of Artificial Intelligence (AI) on the relationship between these variables and academic misconduct. A quantitative research methodology was employed, administering questionnaires to 300 students from several colleges in East Java to gather survey data. The statistics demonstrate that four elements of the Fraud Pentagon: pressure, opportunity, rationalization, and competence, significantly influence academic misconduct, whereas arrogance and religiosity do not. AI, as a moderating variable, enhances the effect of skills on academic fraud while reducing the effect of opportunity. This study enriches academic literature by introducing AI as a moderating variable in the digital age and incorporating religion, a rarely explored factor.

Introduction

Academic fraud in Indonesia, including cheating, plagiarism, and the use of jockey services, has emerged as a growing concern among educators and academic authorities. A survey conducted by Pertama and Anggiriawan (2022) revealed that 75% of students admitted to engaging in academic dishonesty during examinations. Similarly, a study conducted by Christiana et al. (2021) indicated that 64% of students perceived cheating as more accessible in online assessments owing to diminished direct supervision. Moreover, plagiarism remains a significant issue, as many students struggle to distinguish between proper citation practices and academic misconduct (Wardani & Saputri, 2023).

The Fraud Pentagon Theory clarifies the determinants of academic fraud, encompassing pressure, opportunity, rationalization, competence, and arrogance. Students experiencing academic stress and competitive pressure may resort to shortcuts, such as cheating or using jockey service (Ruzain et al., 2019). A study conducted by Ardinansyah et al. (2018) demonstrated that inadequate supervision heightens the propensity for dishonest conduct. Rationalization significantly influences students, who frequently excuse cheating as a prevalent practice in a competitive academic setting (Muslimah & Yudiarso, 2023).

A decline in academic ability serves as an additional contributing factor, as students with low confidence are more likely to replicate activities or use jockey services (Muhsin et al., 2018). Arrogance affects behavior, with students who consider themselves as skilled in navigating the system being more prone to violating academic integrity (Wardhani et al., 2024). Preventing academic dishonesty requires a comprehensive approach, including improved supervision and education on academic integrity within the university environment.

The development of artificial intelligence (AI) has introduced a novel dimension to academic fraud. AI tools, such as chatbots and content generators, enable students to create assignments, examinations, and research papers that appear original but are, in fact, generated by systems or applications (Nguyen & Goto, 2024; Oravec, 2023; Vold & Eikset, 2024; Xie et al., 2023). Greitemeyer and Kastenmüller (2024) suggest that students exhibiting higher levels of behavioral control are more inclined to employ AI for unethical ends. Puspitosari (2022) observes that artificial intelligence increases the probability of academic dishonesty, especially in settings characterized by minimal supervision. These practices may threaten academic integrity and diminish the credibility of educational institutions (Xie et al., 2023). Oktarina (2021) indicates that while the components of the Fraud Pentagon continue to be pertinent, AI presents new challenges around academic fraud. As AI generates content that can bypass plagiarism detection systems, it complicates instructors' efforts to identify dishonest submissions (Sarfo, 2023).

The impact of religiosity on students' moral behavior is substantial. Studies have shown that individuals with religious affiliations demonstrate a lower likelihood of engaging in academic fraud (Tantri et al., 2024). Ridwan and Diantimala (2021) discovered that students exhibiting higher levels of religiousness show a decrease in dishonest behavior tendencies. Additionally, self-control, frequently linked to religiosity, impacts the propensity for procrastination and dishonest behavior, particularly in the context of AI use (Nugroho & Jaryanto, 2024).

This study analyzes the impact of fraudulent Pentagon factors and religiosity on academic fraud as well as examines the moderating role of AI. Understanding the interaction between AI and the factors contributing to academic fraud is anticipated to facilitate the development of more effective strategies for promoting a culture of academic integrity. The findings of this study are intended to advance research and inform academic policies on academic fraud in the digital age.

Literature Review

Academic fraud encompasses unethical actions deliberately undertaken by students to gain academic advantages, such as cheating, plagiarism, or providing unauthorized assistance during examinations or assignments (Widiastuti & Fitriani, 2021). This behavior is shaped by multiple internal and external influences, including pressures from the social and academic contexts (Andayani & Sari, 2019). The increased pressures or incentives correlate with a heightened probability of individual engagement in dishonest practices (Wenzel & Reinhard, 2020).

The Fraud Pentagon Theory, known as Crowe's Fraud Pentagon Theory, expands on the foundational Fraud Triangle concept that was first presented by Crowe (2011). This theory builds upon the foundational concepts established in the earlier Fraud Triangle introduced by Donald R. Cressey. Yovita and Suryani (2024) present the concept as an extension of the Fraud Triangle, integrating two further components, competence and arrogance, which enhance the examination of potential fraudulent behavior.

Figure 1. Fraud Pentagon

Fraud involves intentional actions carried out by individuals, whether internal or external to an organization, aimed at securing personal or collective benefits to the detriment of others. Permatasari (2021) explains that fraudulent activities are typically driven by various internal and external factors. The perspective articulated corresponds with the conclusions by Radulović and Uys (2019), who define fraud as a deliberate act of manipulating or distorting facts, carried out for personal gain and are potentially harming others. Faradiza (2019) describes fraud as a calculated and purposeful act of misappropriation of assets that the perpetrator does not own. Individuals in high-ranking positions often exhibit this behavior, thus maintaining an egocentric attitude and viewing themselves as being exempted from rules and internal controls. Yovita and Suryani (2024) argue that such individuals often perceive a lack of potential sanctions, which increases their propensity to engage in fraudulent behavior without apprehension.

In this context, the Fraud Pentagon explains the various elements that influence the emergence of fraud and analyses the likelihood of collusion among certain parties committing fraud within specific domains (Permatasari, 2021). Abayomi (2016) identifies five key factors that drive individuals to engage in fraudulent behaviour: pressure, opportunity, rationalization, competence (or capability), and arrogance. These five elements collectively form a framework for understanding why fraudulent actions occur and the negative consequences they may produce.

Pressure

Pressure refers to the presence of incentives or motivations that drive individuals to commit and conceal fraudulent actions. This form of pressure can originate from various sources, including situational instability, performance targets, external demands, or personal needs. It serves as a driving force that compels individuals to engage in fraudulent behavior to achieve outcomes perceived as beneficial (Zhao & Zhang, 2021). The pursuit of such targets generates its own form of stress, particularly for students striving to attain the best grades or academic achievements.

H_1: Pressure has a positive effect on academic fraud.

Opportunity

Opportunity denotes the circumstances that enable the perpetration of fraud, often arising from deficiencies in internal control systems and inadequate oversight procedures. Elder et al. (2013) assert that opportunity can be regarded as a condition that permits persons, particularly students, to engage in cheating, frequently due to inadequate supervision.
H_2: Opportunity has a positive effect on academic fraud

Rationalization

Rationalization is the process by which individuals provide justifications for their intended fraudulent actions. This represents a psychological mechanism in which an individual seeks to justify deviant behaviors, frequently to evade recognition by others and to mitigate the risk of facing repercussions or penalties stemming from their inappropriate actions (Aprilia, 2017).
H_3: Rationalization has a positive effect on academic fraud

Competence

Competence refers to the ability or expertise possessed by an individual to manipulate or circumvent internal control systems. This is supported by Tampubolon et al. (2020), who has stated that capability represents a situation in which an individual has the skills necessary to commit fraud and does so knowingly. According to Boyle et al. (2015), competence is defined as the capacity of a fraud perpetrator to penetrate and exploit weaknesses in an organization's internal control system. This competence includes the ability to design complex manipulative strategies and the skills to navigate social dynamics to gain personal advantage, including influencing others to participate in the fraudulent act. Individuals with high levels of creative tactical ability are more likely to engage in academic fraud (Rachmawati, 2024).
H_4: Competence has a positive effect on academic fraud

Arrogance

Arrogance refers to a sense of superiority displayed by individuals who believe that rules and internal control systems do not apply to them. It reflects a form of pride or greed in individuals within an organization who perceive themselves as being above the system, thus feeling immune to existing oversight mechanisms (Crowe, 2011). This trait often arises from a strong sense of self-interest which amplifies an individual's perceived superiority over others (Faradiza, 2019). Such a defense mechanism can serve to protect one's self-esteem, ultimately motivating individuals to engage in academic fraud (Fadersair, 2019).
H_5: Arrogance has a positive effect on academic fraud

Religiosity

The influence of religiosity on behaviors associated with academic dishonesty is significant. Numerous studies have shown a correlation between higher levels of religiosity and a reduced propensity for academic dishonesty. Research indicates that students who regularly attend religious services are less likely to cheat compared to those who participate less frequently (Habiburrahim & Suprayogi, 2021). Furthermore, research indicates that religiosity also shapes perceptions of cheating, with students who have stronger religious commitments tending to hold more negative views toward academic dishonesty (Nelson et al., 2017). However, certain studies indicate that religiosity does not consistently serve as a significant moderator in the relationship between various factors, including competition or extrinsic incentives and academic fraud (Novianti, 2022). Additionally, various studies suggest that the impact of religiosity on academic dishonesty may vary depending on cultural context and prevailing societal values (Zhao et al., 2022; Andao et al., 2024). Data indicates that religion might play a role in reducing academic fraud; however, its effect is not consistently uniform and can be affected by other factors.
H_6: Religiosity has a negative effect on academic fraud.

The Use of Artificial Intelligence

The integration of technology, particularly artificial intelligence (AI), in education is advancing rapidly and significantly enhancing the quality of learning. Research shows that technology powered educational tools, such as interactive media developed in private vocational high schools in Indonesia (Kapele et al., 2023), have the potential to increase student engagement and improve comprehension of learning materials. Furthermore, AI platforms like ChatGPT have the potential to boost students' academic performance through personalized guidance and support (Salsabila et al., 2024). The incorporation of AI in education presents considerable opportunities to improve the learning experience, while simultaneously introducing new risks related to academic integrity. Wardani and Saputri

(2023) argue that fraudulent behavior is strongly influenced by the elements outlined in fraud theory, highlighting the importance of incorporating educational values and creating transparent integrity systems to reduce unethical practices. In contrast, Saduk and Chariri (2024) observed that the relationship between academic pressure and the accessibility of AI resources has led some students, particularly in accounting, to participate in unethical practices involving these tools. These findings underscore the importance of implementing rigorous standards and oversight systems to ensure that the integration of AI enhances educational results and preserves academic integrity.

H_7: Artificial intelligence as a moderating variable strengthens the influence of pressure on academic fraud.

H_8: Artificial intelligence as a moderating variable weakens the influence of opportunity on academic fraud.

H_9: Artificial intelligence as a moderating variable strengthens the influence of rationalization on academic fraud.

H_{10}: Artificial intelligence as a moderating variable strengthens the influence of competence on academic fraud.

H_{11}: Artificial intelligence as a moderating variable strengthens the influence of arrogance on academic fraud.

H_{12}: Artificial intelligence as a moderating variable weakens the influence of religiosity on academic fraud.

Research Method

This study employs quantitative methodology, collecting data through questionnaires. By using a Likert scale that ranged from 1 to 5, the responses were analyzed and quantified: 1 indicates strong disagreement, 2 indicates disagreement, 3 indicates moderate agreement, 4 indicates agreement, and 5 indicates complete agreement. The analysis method used was Moderated Regression Analysis (MRA), with independent variables comprising religiosity and the five components of the Fraud Pentagon Theory: pressure, opportunity, rationalization, competence, and arrogance, while the dependent variable is academic fraud. The study incorporates a moderating variable, Artificial Intelligence (AI), to evaluate its effect on the relationship between independent and dependent variables.

Table 1. Operational Definition of Variables

Variable	Code	Indicator	Major Reference
Pressure	X1.1	Family Economy	(Apriani et al., 2017; Achmad & Pamungkas, 2018)
	X1.2	Parents' demands	
	X1.3	Desire for wants that exceed needs	
	X1.4	Ignorance	
Opportunity	X2.1	Rules are not strict	(Apriani et al., 2017; Sihombing & Budiartha, 2020)
	X2.2	Violations committed every day are heeded	
	X2.3	Internal weakness	
	X2.4	Inability to assess the quality of performance	
Rationalization	X3.1	Fraud is often done	(Achmad & Pamungkas, 2018)
	X3.2	Allowing undue culture	
	X3.3	Group environment and influence	
Competence	X4.1	Moral suppression ability	(Aprilia et al., 2021)
	X4.2	Personal belief in committing fraud	
	X4.3	Analytical ability of the scoring system	
	X4.5	Social-manipulative ability,	
	X4.6	Situational utilization	
Arrogance	X5.1	Academic motivation	(Vousinas, 2019; Fadersair & Subagyo,2019)
	X5.2	Prestige protection	
	X5.3	Low social control	
	X5.4	Ambition and competitiveness	
Religiosity	X6.1	Religious adherence	(Zhao et al., 2022; Andao et al., 2024)
	X6.2	Cognitive understanding	
	X6.3	Spiritual discipline	
	X6.4	Fear of divine punishment	
	X6.5	Religious belief	
	X6.6	Religious activity	
	X6.7	Internalization of religious values	
Academic Fraud	Y	Academic fraud while teaching and learning	(Munirah & Nurkhin, 2018; Rifaldi, 2020)

This study's population consists of university students in East Java, a region recognized for its advancement and openness to AI integration in higher education. Research by Isnaini and Muslimin (2024) indicates that educational institutions in Indonesia, particularly in East Java, have made considerable efforts to tackle the challenges associated with the implementation of emerging technologies, including AI. The study indicates that nationwide universities implement training and awareness programs for staff and students, highlighting the benefits of AI in the learning process. This indicates the willingness of higher education institutions in East Java to incorporate contemporary technologies into their academic frameworks (Isnaini & Muslimin, 2024). This study explores the potential moderating role of AI in strengthening or weakening the effects of pressure, opportunity, rationalization, competence, and arrogance, as outlined in the Fraud Pentagon Theory, along with the influence of religiosity on academic fraud.

Results and Discussion

Validity and reliability testing is essential to ensure the quality and consistency of data in questionnaire-based research. Validity ensures that the questionnaire measures the intended variables, while reliability tests the consistency of measurement results. Both tests enhance the credibility and accuracy of the research, ensuring that the data collected is trustworthy and accountable.

Validity test

Based on Table 2, for the instrument tested on 300 respondents, the computed value of r was 0.1152. The critical r at the 0.05 significance level, it is known that the computed r value exceeds the critical r table value (r-calculated > r-table) thus it can be concluded that the indicator items meet the validity requirements and are considered valid.

Table 2. Validity Test

Item	Item Rest Correlation	Item	Item Rest Correlation
X1.1	0.8430	X6.6	0.5505
X1.2	0.8926	X6.7	0.6554
X2.1	0.5817	Y1	0.6135
X2.2	0.6203	Y2	0.5946
X2.3	0.4111	Y3	0.6880
X3.1	0.5639	Y4	0.7031
X3.2	0.6837	Y5	0.7618
X3.3	0.6628	Y6	0.7924
X4.1	0.6293	Y7	0.7921
X4.2	0.8298	Y8	0.6902
X4.3	0.8187	Y9	0.6767
X4.4	0.8352	Y10	0.6733
X4.5	0.7828	M1	0.6487
X4.6	0.7878	M2	0.7654
X5.1	0.6943	M3	0.7644
X5.2	0.6529	M4	0.8058
X5.3	0.6311	M5	0.7982
X5.4	0.6845	M6	0.7695
X6.1	0.7019	M7	0.8619
X6.3	0.6683	M8	0.7792
X6.3	0.7214	M9	0.8271
X6.4	0.4359	M10	0.5182
X6.5	0.5711		

Reliability test

Reliability testing was conducted to measure the internal consistency of the research instrument using Cronbach's Alpha. Table 3 shows that the Cronbach's Alpha value for each variable exceeds the minimum threshold of 0.6, indicating that the research instrument has excellent internal consistency. This means that each item in the questionnaire contributes consistently to the measurement of the research variables. These results align with the literature, which states that Cronbach's Alpha value above 0.6 indicates good reliability. Therefore, it can be concluded that this research instrument is reliable for measuring the impact of the Fraud Pentagon and religiosity on academic fraud, with AI as a moderating variable.

Table 3. Reliability Test

Variable	Cronbach's Alpha	Description
Pressure (X1)	0.6685	Realibel
Opportunity (X2)	0.7088	Realibel
Rationalization (X3)	0.7866	Realibel
Competence (X4)	0.9190	Realibel
Arrogance (X5)	0.6769	Realibel
Religiosity (X6)	0.8453	Realibel
Fraud Academic (Y)	0.9190	Realibel
Artificial Intelligence (M)	0.9349	Realibel

Source: Processed data

Descriptive Statistic Test

Table 4. Descriptive statistics test

Item	Mean	Std. Deviation	Item	Mean	Std. Deviation
X1.1	1.55	.9400953	X6.5	4.52	.7380712
X1.2	1.886667	1,124591	X6.6	3.526667	1.140303
X1	1.723101	.9024154	X6.7	4.226667	.8510994
X2.1	1.613333	1.016826	X6	4.024412	.6662181
X2.2	1.62	.9584687	Y1	2.136667	1.15286
X2.3	2.266667	1.222239	Y2	2.906667	1.198364
X2	1.853376	.8618625	Y3	1.713333	1.020438
X3.1	1.96	1.201337	Y4	1.82	.9954411
X3.2	1.906667	1.155743	Y5	1.996667	1.183776
X3.3	1.506667	.9125411	Y6	2.033333	1.065837
X3	1.800633	.9219944	Y7	1.71	.977626

This study involved 300 respondents, consisting of 95 male respondents (31.6%) and 205 female respondents (68.4%). This distribution demonstrates gender diversity within the studied population, which is expected to provide a representative depiction of the behaviors or phenomena examined in this research. Table 4 classifies variation in the questionnaire responses into two categories: a homogeneous average with a standard deviation below 1. This classification is evidenced by responses related to indicators such as family economy, frequent fraud behavior, social-manipulative ability, religious adherence, and internalization of values. Meanwhile, responses related to parental demands, weak institutional rules, peer influence, prestige protection, fear of divine punishment, and various forms of academic fraud showed higher variability, as indicated by standard deviations above 1, suggesting more diverse perceptions among respondents. This analysis shows that fraud-related factors such as pressure, opportunity, rationalization, competence, and arrogance, as well as religiosity, had varied responses, while the use of AI demonstrated more uniform answers.

The lowest mean score for variable X was X4.4, with a mean of 1.486667 and highly homogeneous responses (SD = 0.8864394). The low mean indicates that most respondents tend to disagree or strongly disagree with the statement. This means that most respondents do not find it easy or tend to encourage others to engage in academic fraud. Additionally, the relatively small standard deviation reflects that the respondents' perceptions regarding this statement were very homogeneous, meaning their responses were consistent and clustered closely around the average value.

On the other hand, the highest mean score for variable X was observed in item X6.5, with a mean of 4.52 and highly heterogeneous responses (SD = 1.140303). The high means indicate that, in general, respondents strongly believe in the religion they currently follow. However, the relatively large standard deviation suggests that there is a wide range of views among respondents regarding the level of belief. While most respondents strongly agreed, there were also respondents who gave different answers, resulting in a wider data spread and reflecting a high degree of heterogeneity.

From the previous comparison, it can be seen that the majority of respondents consistently reject the behavior of encouraging others to engage in academic fraud (homogeneous), while in the aspect of religious belief, even though most respondents exhibit a high level of belief, there is greater diversity of opinion among the respondents (heterogeneous). In other words, respondents demonstrate a high level of consistency in rejecting fraudulent behavior but exhibit varying levels of intensity in their beliefs about their respective religions.

Most respondents expressed the belief that the utilization of AI provides benefits in the academic context, as reflected in the dominant agreement with statements M1 through M9. These findings indicate a positive attitude among students toward the integration of technology, particularly AI, in supporting the learning process and

academic task completion. The high level of agreement also reflects a strong acceptance of AI as a tool in academic activities. However, the consensus also raises the potential risk of overreliance on the technology, since AI is perceived as simplifying task completion and accelerating material comprehension. This positive perception further indicates that the use of AI is seen as capable of enhancing efficiency, broadening access to information, and promoting productivity in academic activities.

Normality Test

The normality test was conducted using the Skewness and Kurtosis approach. Based on Table 5, the Pr(Skewness) value obtained was 0.0869, and the Pr(Kurtosis) value was 0.8879. The combined Prob > chi^2 value was 0.2268, which exceeds the significance level of 0.05. Therefore, it can be concluded that the residual data is normally distributed.

Table 5. Normality Test

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
Residual	300	0.0869	0.8879	2.97	0.2268

Source: Processed data

Multicollinearity Test

Based on Table 6, the multicollinearity test was performed by examining the Variance Inflation Factor (VIF) and Tolerance values. The analysis results indicate that all independent variables have VIF values below 10 and Tolerance values above 0.1. Therefore, it can be concluded that there is no multicollinearity in this regression model.

Table 6. Results of the Multicollinearity Test

Variable	Collinearity Statistics	
	Tolerance	VIF
Pressure (X1)	0.615154	1.63
Opportunity (X2)	0.455118	2.20
Rationalization (X3)	0.371940	2.69
Competence (X4)	0.344902	2.90
Arrogance (X5)	0.675648	1.48
Religiosity (X6)	0.917586	1.09

Source: Processed data

Heteroscedasticity Test

Based on Table 7, the Breusch-Pagan/Cook-Weisberg test, a Prob > chi^2 value of 0.0268 was obtained, which is less than 0.05. This indicates that the model exhibits heteroscedasticity. Therefore, in this study, further testing was conducted using robust standard errors to obtain more accurate coefficient estimates and valid significance tests.

Table E. Results of the Heteroscedasticity Test

Breusch-Pagan / Cook-Weisberg test	Prob
chi-square (1)	4.90
Prob > chi2	0.0268

Source: Processed data

Model 1

Table 8. Multiple Regression Analysis

Y	Coefficient	P>ltl	Description
Pressure (X1)	.4096204	0.081	Not Supported
Opportunity (X2)	.3039575	0.094	Not Supported
Rationalisation (X3)	.4162277	0.028	Supported
Competence (X4)	.9120789	0.000	Supported
Arrogance (X5)	-.0644339	0.554	Not Supported
Religiosity (X6)	.0037097	0.956	Not Supported
Constant	5.965339	0.007	
Prob. F = 0.0000; R-Squared = 0.6292			

Based on the results of multiple linear regression analysis in Table 8, it can be concluded that rationalization (X3), and competence (X4) have a positive and significant effect on the dependent variable (Y), with competence (X4) showing the most dominant influence. On the other hand, the variables pressure (X1), opportunity (X2), arrogance (X5) and relationship (X6) are insignificant, indicating that these four factors have no direct impact on Y. The model for this research is as follows:

$$Y = 5.965339 + 0.4096204X1 + 0.3039575X2 + 0.4162277X3 + 0.9120789X4 - 0.0644339X5 - 0.0037097X6 + e$$

The Influence of Pressure on Academic Fraud

H_1 is not supported. This finding contradicts the Fraud Pentagon Theory, which states that pressure can increase academic cheating. Financial, social, or professional pressure can drive individuals to cheat as a solution to overcome difficulties, making it a major factor in motivating cheating behavior (Crowe, 2011). Research on pressure and academic cheating behavior of Generation Z shows that although pressure can encourage cheating, other factors such as moral reasoning, personal values, and educational interventions also play a role. Moral behavior can reduce the effects of pressure in cheating (Heriyati & Ekasari, 2020), while Yadasang and Ndiak (2023) revealed that students have awareness of the consequences of cheating, which reduces their pressure to cheat. Another study by Garcines et al. (2024) showed that non-academic pressures, such as parental expectations or peer influence, can reduce intrinsic motivation and ethical decision making. Learning discipline and independent learning strategies are important in reducing the tendency to cheat despite external pressure (Afrianti et al, 2023; Lestari & Mutiah, 2020).

Table 5 shows that respondents generally agreed more with the higher mean value on X1.2 (1.886667) than with X1.1 (1.55). This implies that, compared to parental pressure, societal and peer pressures are perceived to more likely cause academic dishonesty. Stated differently, students are more likely to cheat under pressure from their parents or family than from social rejection or peer isolation. This outcome reflects the characteristics of Generation Z, who largely seek social validation and group affiliation as social interactions are so crucial in decision-making, including in academic behavior. Therefore, in this study, indicator X1.2 may be considered as the main one applied to measure the pressure linked to academic fraud. Pressure is the most influential independent variable in academic cheating behavior, as seen from the results of the t-test statistical coefficient results.

The Influence of Opportunity on Academic Fraud

H_2 is not supported. This finding does not align with the Fraud Pentagon Theory. Although adolescents may have the opportunity to cheat, their decisions are more influenced by internal moral evaluation and social expectations than by the mere presence of opportunity. They are often more concerned with social consequences or the loss of reputation among peers than with the potential for immediate gain (Rahman & Arifin, 2022). Improvement in academic integrity standards, guidance, and assignment controls would significantly lower the cases of academic fraud among Generation Z students (Sari et al., 2025; Flom et al., 2023; Sholikhah et al., 2024). Indicator X2.3 with a score of 2.27 in Table 5 shows that students who receive assignments with unclear grading systems and deadlines have the highest average, therefore, showing the most important factor influencing the possible level of academic cheating. This implies that eventually the uncertainty and pressure generated by the teacher or the university could inspire students to look for short routes. People are more prone to act dishonestly in response to events they perceive as unfair or perplexing, for instance vague tests or arbitrary deadlines.

The Influence of Rationalization on Academic Fraud

H_3 is supported. This finding aligns with the Fraud Pentagon Theory. Rationalization allows individuals to justify cheating by convincing themselves that the act is harmless or legitimate under the circumstances, thus, reducing the feelings of guilt (Crowe, 2011). Research shows that rationalization encourages students to engage in dishonesty as it allows them to disregard moral responsibility for their actions (Dias-Oliveira et al., 2024). For example, students may justify cheating by assuming that their peers have an unfair advantage or that instructors are less attentive, to make the behavior seem acceptable (Gunawan & Pramadi, 2018). However, not all studies agree on the influence of rationalization. According to certain studies, the impact of rationalization on academic fraud is limited since students are still cognizant of the unethical nature of their actions and experience feelings of remorse, which mitigates the effect of rationalization (Persulessy et al., 2022; Sasongko et al., 2019).

The perception of uncertain appropriate behavior can aggravate rationalizing processes, increasing the possibility of students justifying their acts (Serhan et al., 2022). The relevance of rationalization in academic misconduct depends on personal awareness and contextual elements including academic policies and ideas of justice. Indicator X3.1 in Table 5 reveals that students who believe they do not harm anyone by cheating during exams have the highest average score (1.96) among all X3 indicators, making it the most significant factor in supporting the opportunity for academic fraud. This statement shows that cheating tends to be justified if its impact

on others is not apparent. This rationalization weakens feelings of guilt and increases the likelihood of repeated offenses, fostering a permissive attitude toward dishonest academic behavior.

The Influence of Competence on Academic Fraud

H_4 is supported. Competence influences academic fraud among Generation Z through the Fraud Pentagon Theory. Competence equips individuals the ability to commit fraud more effectively because they have the knowledge, skills, and position that allow them to access the resources or information needed to cover up the fraudulent act (Crowe, 2011). Perceptions of competence are a significant factor in academic fraud, as explained in the Fraud theory, which links perceived competence with a higher likelihood of academic fraud behavior (Dias-Oliveira et al., 2024). Students with high confidence in their cheating abilities tend to show a higher propensity for dishonest behaviors. Studies involving economics students indicate that the perception of competence plays a significant role in influencing academic fraud (Sastri & Pertamawati, 2020). The evidence indicates that students with confidence in their cheating skills often rationalize their behavior, thus perceiving it as less severe, which subsequently raises the probability of engaging in cheating (Dias-Oliveira et al., 2024).

Particularly regarding academic misconduct, the Fraud Pentagon Theory emphasizes the vital need of pressure in the field of research fraud (Setyorini et al., 2023). Analyzing the relevance of competency based on the Pentagon Fraud Theory would help one create workable strategies to lower academic fraud among Generation Z students. Indicator X4.1, based on Table 5, shows the highest average value compared to other indicators and states that students can suppress guilty feelings or even can feel unguilty after committing academic fraud. This ability to suppress guilt significantly contributes to the tendency of individuals to engage in academic fraud. When moral barriers weaken, actions are more easily justified and repeated. Therefore, this indicator is one of the most influential psychological factors in dishonest behavior.

The Influence of Arrogance on Academic Fraud

H_5 is not supported. The study's finding that arrogance has no effect on academic cheating is inconsistent with the Fraud Pentagon Theory (Crowe, 2011). According to the Fraud Pentagon Theory, particularly in cases when people feel better than others, arrogance is regarded as the main cause of fraud (Padayachee, 2021). In the workplace, arrogant attitudes can lower morale, impede acceptance of criticism, and cause staff members to get emotionally tired (Borden et al., 2018). Generation Z is considered particularly vulnerable to the negative effects of arrogance, which can harm social relationships in the workplace, create feelings of undervalued, and lead to alienation (Nguyen & Petchsawang, 2024; Fan et al., 2023). Excessive self-confidence can lead to poor decision-making and sense of loss, undermining organizational ethics and lack of respect (Fan et al., 2023). Therefore, controlling arrogance is crucial to fostering a healthy and integrity-driven work culture. A study suggests that narcissistic traits (including arrogance) may cause individuals to feel superior which does not always translate into cheating. They state that highly arrogant individuals may be more likely to avoid cheating because they feel they do not need external help to achieve their goals (Babcock et al, 2010).

According to Table 5, the finding in indicator X5.2 with a low mean of 1.65 suggests that most respondents do not perceive cheating as a prerequisite for achieving good grades. This finding indicates that despite a tendency toward self-actualization, arrogant impulses do not encourage academic fraud. Confidence in one's own abilities appears to be more dominant than justifying dishonest behavior.

The Influence of Religiosity on Academic Fraud

H_6 is not supported. The results of this study are not supported by the honesty theory (Davis et.al, 2010). Honesty in an academic context is considered as an individual's moral integrity, often closely related to an individual's religiosity in practice. Individuals with high religiosity are generally considered less likely to engage in academic fraud (Failikah, 2021). Although religious students who regularly worship tend to cheat less, the connection between religiosity and academic fraud remains unclear due to conflicting research findings (Nisa & Fitriasari, 2021; Rahmawati & Susilawati, 2019). This element does, however, not necessarily lessen the impact of other factors including external incentive (Uyun et al., 2024) and competitiveness. According to some studies, religion may have different impacts depending on gender. In fact, it has larger effects on women (Mensah & Azila-Gbettor, 2018). It is also not always strongly linked with dishonest behavior. Personality features like caution also affect religiosity; therefore, prevention of academic fraud must consider elements outside of relativism (Amponsah et al., 2021; Heryadi et al., 2024).

Table 5 shows that although the average degrees of religiosity are rather high, individual differences abound (shown by the significant standard deviation), and a lack of participation in religious activities indicated by low scores on some indicators, such as X6.6, means that religiosity has not entirely shaped people's behavior, including their honesty in academics. This means that religious beliefs and practices have not consistently translated

into self-control over cheating. Therefore, religiosity, which is more symbolic or normative, tends to be insufficient to influence or deter academic fraud, which is often influenced by pragmatic factors such as grade pressure or academic situations (Penny & McGowan, 2017).

Model 2

Table 9. Moderated Regression Analysis (MRA)

Y	Coefficient	P>ltl	Description
Pressure (X1)	.4614821	0.027	Supported
Opportunity (X2)	.3993518	0.019	Supported
Rationalisation (X3)	.374609	0.029	Supported
Competence (X4)	.8493659	0.000	Supported
Arrogance (X5)	-.0529798	0.647	Not Supported
Religiosity (X6)	-.0239531	0.712	Not Supported
Artificial Intelligence (M)	.018123	0.672	
X1M	.0295306	0.345	Not Supported
X2M	-.0729924	0.005	Supported
X3M	-.0101073	0.705	Not Supported
X4M	.0428402	0.008	Supported
X5M	-.0221252	0.223	Not Supported
X6M	.0149403	0.099	Not Supported
Constant	6.871622	0.019	
Prob. F = 0.0000; R-Squared = 0.6469			

Source: Processed data

The probability value is 0.000, which is less than 0.05 (0.000 < 0.05). This F-test result indicates that at least one of the independent variables has a significant influence on the dependent variable, which is academic fraud (Y). The R-squared (R^2) value of 0.6469 indicates that the research's model can explain 64.7% of academic fraud. In other words, this model has a good ability to explain the relationship between the variables analyzed, although there is still approximately 35.3% of variation that cannot be explained by the model. This unexplained variation is likely attributed to other factors outside the model.

Based on the results of the moderation regression analysis in Table 9, Artificial Intelligence (AI) plays a significant role as a moderator, weakening the effect of Opportunity (X2) on Y while strengthening the effect of Competence (X4). This finding suggests that increasing competencies supported by AI can provide optimal results, while the role of opportunities needs to be managed carefully, as its influence is weakened when interacting with AI. The model for this research is as follows:

$$Y = 6.8716 + 0.0181M + 0.0295X1M\ 0.0730X2M - 0.0101X3M + 0.0428X4M - 0.0221X5M + 0.0149X6M + e$$

Discussion

AI Moderates the Influence of Pressure on Academic fraud

H_7 is not supported. This finding contradicts the initial expectation that AI could exacerbate the relationship between pressure and academic fraud. According to the Fraud Pentagon Theory (Crowe, 2011), pressure can indeed increase the incentive to commit fraud, but AI in this context does not appear to act as a factor that increases the opportunity to commit fraud. According to research, the understanding of AI improves the influence of rationalizing on plagiarism. However, AI does not change the impacts of pressure, opportunity, or competence on plagiarism (Atmini et al., 2024). Another study highlighted the moral conundrums related to AI in the framework of academic integrity, it did not show that AI reduces the pressures leading to cheating (Nguyen & Goto, 2024; Xie & Chakravarty, 2023; Pariyanti et al., 2025). Therefore, AI does not moderate the effect of pressure on academic fraud.

Based on Table 5, the average perception of using AI is very positive (with an average M = 4.06), indicating that respondents feel supported by this technology. The low variation in responses (with standard deviations ranging from 0.70–0.83) shows that most respondents share a uniform view on the benefits of AI. However, despite the positive reception of AI, the relationship remains unaffected by other external factors that could influence academic fraud. This finding is related to the fact that, although pressure affects academic fraud, its impact on respondents is not large or varied enough. In other words, although there is a relationship between pressure and academic fraud, the existing conditions do not create enough significant interaction to allow AI to act as a moderating variable. Therefore, despite the positive benefits AI offers to respondents, its influence on academic fraud remains limited, as there are no external factors that are strong enough to be moderated.

AI Moderates the Influence of Opportunities on Academic Fraud

H_8 is supported. This finding aligns with the Fraud Pentagon Theory (Crowe, 2011), which states that opportunity is one of the main factors that drives individuals to commit fraud. In this case, AI provides greater access and ease to manipulate information or commit fraud without detection, which increases the opportunity to commit fraud. AI plays a dual role in the context of academic fraud among Generation Z. On one hand, it increases the chances of cheating through its ability to instantly generate high-quality content (Oravec & Oravec, 2023; Nguyen & Goto, 2024). On the other hand, AI also offers preventive technologies, such as facial recognition and digital watermarks that can help detect and prevent cheating (Oravec & Oravec, 2023). When students have a good understanding of the functions and ethical implications of using AI, the relationship between opportunity and dishonest behavior can be weakened (Atmini et al., 2024). Tech-savvy Generation Z students tend to use AI widely, both for legitimate as well as unethical learning purposes (Atmini et al., 2024; Smith et al., 2025). Therefore, educational institutions need to take an active role in shaping responsible academic behavior through digital ethics education and innovative assessment designs (Xie et al., 2023; Lye & Lim, 2024) so that AI serves as a learning tool and reinforces academic integrity.

The hypothesis finds support in the elevated score for the statement "Using AI can enhance my ability to complete assignments" (M6, mean = 4.55), suggesting that respondents hold a strong appreciation for AI as a tool for learning. Meanwhile, the low mean on indicators of opportunity, such as "adjusting my position during the exam to make it easier to cheat" (X2.1, mean = 1.61), indicates a minimal inclination to exploit opportunities for cheating. The data suggest that favorable views of AI may diminish the impact of opportunity on academic fraud behavior.

AI Moderates the Influence of Rationalization on Academic Fraud.

H_9 is not supported. According to the Fraud Pentagon Theory (Crowe, 2011), rationalization is a psychological mechanism through which individuals justify fraudulent behavior with seemingly legitimate reasons even though they know it is wrong. However, these findings suggest that while technology provides tools that make it easier for individuals to commit fraud, rationalization is not further strengthened by the use of AI. AI does not moderate the influence of rationalization on academic fraud; in fact, it may exacerbate it. Research shows that understanding AI strengthens the positive influence of rationalization on plagiarism as students who are more knowledgeable about AI tend to rationalize their dishonest behavior (Nguyen et al., 2024). AI tools make it easier to produce plagiarized content which can then be justified as the use of technology rather than dishonest behavior (Nguyen et al., 2024; Atmini et al., 2024). Furthermore, cheating behaviors driven by AI are often concealed by students, indicating that AI can increase the prevalence of rationalized cheating that is hidden from direct scrutiny (Atmini et al., 2024). While AI can detect and prevent cheating, its presence does not reduce the rationalization process but provides more advanced ways for students to justify their actions (Nguyen et al., 2024; Atmini et al., 2024). Therefore, AI does not moderate but rather worsens the rationalization of academic fraud.

The data shown in Table 5 reveals a mean score of 4.55 for the statement "Using AI can enhance my ability to complete assignments," highlighting students' favorable perceptions of AI concerning this assertion. The results demonstrate that individuals view AI as a significant and advantageous tool for educational applications. From this perspective, the functional attributes of AI are prioritized over the ethical or moral considerations associated with its use. This perspective highlights the operational aspects of AI, while neglecting the ethical or moral considerations related to its use. Therefore, despite its evident benefits, AI alone does not adequately bridge the gap between rationalization and academic fraud. In other words, the implementation of AI does not affect the reasoning that individuals use to rationalize dishonest behavior as there is no relationship between the use of AI and the rationalization of such actions.

AI Moderates the Influence of Competence on Academic Fraud

H_{10} is supported. Based on the Fraud Pentagon Theory (Crowe, 2011), competence refers to an individual's ability to commit fraud where individuals who have skills or knowledge are more likely to take advantage of opportunities to commit fraud. In this context, AI acts as a factor that strengthens this competence by giving teenagers easier access to various tools or information that make it easier for Generation Z to commit fraud without being detected. The role of AI in reinforcing the relationship between competence and academic fraud in Generation Z is quite complex. AI tools, such as ChatGPT, can enhance students' learning and writing abilities (Rejeb et al., 2024), but they also carry the risk of being misused for plagiarism and cheating (Atmini et al., 2024; Chavez et al., 2024; Oravec, 2023).The presence of AI-generated content may pose a risk to students' capabilities and their critical thinking skills (Chavez et al., 2024; Oravec, 2023). Moreover, knowing AI could help students defend cheating by seeing support from AI as a team effort rather than dishonest behavior. Being tech-savvy, Generation Z could consider AI as an essential part of their education (Katalin & Garai, 2024; Gupta et al., 2024).

Reducing these risks will depend on support of ethical use of AI and independent learning. Teachers should develop policies that balance maintaining academic integrity with leveraging the educational benefits of AI (Rejeb et al., 2024; Madhu et al., 2023).

Table 5 shows that respondents regard AI as a relatively useful tool in academic activities since the AI variable (M) has the highest mean (M6 = 4.546) on the statement "AI has many benefits." For those who already understand how the evaluation systems work, strong reliance on AI may particularly help to strengthen the link between academic competencies and unethical behavior like plagiarism or speeding through tasks.

AI Moderates the Influence of Arrogance on Academic fraud

H_{11} is not supported. Based on the Fraud Pentagon Theory, arrogance reflects an attitude of feeling superior or having the right to break the rules which is often used to rationalize fraudulent behavior (Crowe, 2011). Although AI provides easier access to information and increases opportunities for fraud, these findings suggest that arrogance is not further strengthened by the use of AI. For several reasons, we conclude that AI is ineffective in moderating the influence of personal traits such as arrogance on academic fraud. AI tools are often misused by students to facilitate cheating, and such behavior is often concealed when directly questioned, indicating that AI is ineffective in moderating this aspect (Nguyen & Foto, 2024; Pariyanti et al., 2025). Additionally, AI's role in academic integrity is more focused on detection rather than prevention and it does not address personal traits like arrogance which can trigger dishonest behavior (Oravec, 2023; Goel & Nelson, 2024). Moreover, AI's ability to encourage ethical behavior is not very strong because it needs additional support, such as teaching ethics and building a culture of integrity which cannot depend only on AI. Therefore, while AI can detect dishonesty, it does not moderate the influence of personal traits like arrogance on academic fraud.

This hypothesis is supported by the respondents' statements related to students' indifference toward others' views on their grades, even if obtained through cheating (X5.3), with a mean of 1.71. This finding indicates that respondents tend not to approve of arrogant attitudes that disregard social norms for academic achievement, reflecting a generally low level of arrogance within the study population. On the other hand, perceptions of AI were very positive, as shown by the high mean of 4.55 for the indicator "Using AI can enhance my ability to complete college assignments." Thus, the low level of arrogance among respondents may explain why no significant relationship was found between arrogance and academic fraud and why AI could not moderate this relationship, as there was no strong tendency toward arrogant behavior to be moderated.

AI Moderates the Influence of Religiosity on Academic Fraud

H_{12} is not supported. Technology as a moderating variable does not strengthen the influence of religion on cheating among adolescents. Based on honesty theory (Davis et al., 2001), individuals with strong honesty values are often influenced by moral principles highlighting that cheating is wrong and damages personal integrity. This finding suggests that although technology may provide more opportunities to fraud, the influence of religion on honesty remains dominant and is not strengthened by the use of AI. AI plays a complex role as a moderator between religiosity and academic fraud among Generation Z. While the influence of religiosity on fraud is limited, AI has a significant impact on ethical behavior in this generation. Being digitally savvy and pragmatic, Generation Z frequently uses AI tools like ChatGPT for academic tasks, which can increase the risk of cheating (Smith et al., 2025; Toma & Perez, 2025). However, AI use can also encourage ethical behavior through positive attitudes and social norms (Toma & Perez, 2025). Generation Z generally views AI positively as a tool to enhance learning and productivity which can potentially foster academic integrity (Gupta et al., 2024; Katalin & Fodor, 2024). With the support of ethics education and strong regulations, AI could help reduce academic fraud (Gupta et al., 2024; Xie et al. 2023). Thus, while religiosity alone may not be a strong moderator, AI, when used wisely, can shape ethical academic behavior among Generation Z.

This hypothesis is supported by the respondents' statement including "Using AI can enhance my ability to complete college assignments" (M6) with a mean of 4.55. This high score reflects that respondents have a strong positive perception of AI as a tool for completing tasks. However, this positive perception does not automatically lead to an increased tendency to cheat, even among individuals with high religiosity. Therefore, it can be concluded that while AI is considered functionally beneficial, this perception is not significant enough to influence the relationship between religiosity and deviant academic behavior.

Conclusion

This study examines the influence of factors within the Fraud Pentagon Theory and religiosity on academic fraud as well as the moderating role of artificial intelligence (AI) in this relationship. The analysis shows that pressure, opportunity, rationalization, and competence significantly affect academic fraud, while arrogance and religiosity do not have a significant influence. As a moderating variable, AI strengthens the influence of competence on

academic fraud but weakens the impact of opportunity. These findings indicate that the use of AI in the academic context is not uniform and can have varying effects depending on the dimension of fraud involved. This research extends the application of the Fraud Pentagon Theory in the educational context by adding religiosity as an individual value that is still rarely explored and offers a new approach by testing AI as a moderator. This study contributes to the academic discourse in the digital era and enriches the literature on fraudulent behavior in higher education.

Since religiosity was not found to have a significant effect on academic fraud, future researchers are advised to use more detailed and contextually appropriate measures of religiosity that align with student life. For example, religiosity could be assessed based on aspects such as rituals including worships, beliefs, and attitudes toward actions, directly linked to academic situations prone to dishonesty, such as exams or assignment completion. By using more comprehensive and relevant measures, future research is expected to provide more accurate results that better reflect the actual conditions.

The instrument used to measure religiosity in this study was relatively general and did not specifically capture religious behavior within the academic context. This limitation may impact the findings indicating that religiosity does not significantly affect academic fraud. Additionally, while AI was considered as a moderating factor, this study did not explain how various types of AI were used, including the differences between AI for monitoring and AI for education, which may have distinct effects on academic cheating.

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