Pentagon fraud dimensions effects on students' academic dishonesty in online-based learning at vocational high schools

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Abstract. Academic dishonesty is one of the fraud behaviours in education institutions caused by several factors. This study aimed to determine the influences of the pentagon fraud dimensions (pressure, opportunity, rationalizsation, ability, and arrogance) on academic dishonesty in online Accounting learning at SMK Business and Management in Sukoharjo Regency. This research applied a quantitative approach with a causal-comparative research design. The sample included randomly selected 115 Grade XI students of Accounting and Financial Institutions at SMK Negeri 6 Sukoharjo and SMK Muhammadiyah Watukelir Sukoharjo. The data were collected using questionnaires and analysed using nonparametric statistics with the Kruskal-Wallis test. Based on the results of the Kruskal-Wallis test, the opportunity variable has an Asymp. Sig. value of 0.001, rationalisation of 0.043, ability of 0.006, and arrogance of 0.002. These values are smaller than the significance level of 0.05, so H_a is accepted. While the pressure value of 0.573 is greater than 0.05. The results of the study indicate that academic dishonesty in online Accounting learning at SMK Bisnis dan Manajemen Sukoharjo Regency, when viewed from the Fraud Pentagon dimension, is influenced by the opportunity, rationalisation, ability, and arrogance variables, but is not influenced by the pressure variable. In an effort to lower academic dishonesty, schools should implement stronger controls to minimise the chances of cheating, provide ethics training to combat rationalisation, enhance students' capabilities through study aid, and foster a culture of integrity in order to surmount arrogance.

Introduction

The development of technology and information in the 21st century has brought significant changes in various areas of life, including in the world of education. One form of this advancement is online learning, which allows the teaching and learning process to be carried out anytime and anywhere. Online learning offers flexibility in scheduling and the opportunity to connect with people around the world (Verma et al., 2021). The online learning system is an educational activity that utilises the internet network or other computer network media to deliver material to students (Ramdani et al., 2018). In its implementation, teachers and students can interact simultaneously through various digital platforms such as WhatsApp, Telegram, Zoom Meeting, Google Meet, Google Classroom, Quipper School, and Ruang Guru (Asmuni, 2020).

In this era, technology-based learning takes precedence over conventional face-to-face learning. The increasing sophistication of information and communication technology also supports a flexible learning process, without space and time limitations. Martin et al. (2020) said that online learning has become the standard method for delivering material in various parts of the world. Dong et al. (2020) added that this method does not require the physical presence of students in the classroom, as the material can be accessed via the internet. Online learning also allows teachers to provide materials and assignment reminders directly to students (Aini, 2021). However, the implementation of online learning cannot be separated from various challenges. Online learning presents challenges such as limited infrastructure, network issues, and geographical constraints (Syarifuddin et al., 2021). Some of the obstacles that often arise include boredom in students, complaints from parents who feel unable to explain the subject matter, signal constraints, and limited time for assistance from parents due to work demands (Anugrahana, 2020). Despite challenges such as internet connectivity and health concerns, online learning continues to grow in importance as education transitions to the digital era (Verma et al., 2021; Hendra et al., 2025). Online learning requires effective management and modification to ensure learning objectives are met (Suryati, 2018; Sumandya & Widana, 2022).

The lack of students' understanding of the material and the limited support from parents in the learning process opens up opportunities for academic dishonesty. Academic dishonesty is a violation that occurs in the educational environment (Sugiariyanti, Swaraswati, & Sari, 2017). Low self-control and parental influence play an important role in students' tendency to cheat According to Olafson et al. (2014), academic dishonesty includes a variety of intentional acts of fraud in an educational setting, including plagiarism, cheating on exams, and receiving unauthorized aid. Fontanella et al. (2020) group academic dishonesty into several forms, such as using notes during exams, copying friends' answers, helping or allowing others to cheat, and committing plagiarism. A few common reasons of encouraging academic dishonesty include peer competition, insufficient preparation, academic pressure, and the necessity of getting top grades or finding a job after graduation (Simpson, 2016; Morales-Martinez et al., 2019). Parental and instructor pressure, academic pressure, and peer pressure can move students to carry out cheating behaviour (Sarita & Dahiya 2015; Suhardita et al., 2024). Belcheir in Murdiansyah et al., (2017) further elaborated that academic dishonesty is also brought about by feelings of desperation, confusion, and inadequate study time. To explain such an incident, the pentagon fraud theory is the starting point for analysis.

This theory is developed from fraud triangle theory composed of pressure, opportunity, and rationalisation (Skousen et al., 2009), then continued to diamond fraud with the addition of capability Wolfe & Hermanson in (Faradiza, 2019), and subsequently developed to pentagon fraud with the addition of an arrogance dimension (Bawekes, 2018). Dimensions in pentagon fraud include pressure, opportunity, rationalisation, capability, and arrogance (Faradiza, 2019).

The urgency of this research lies in the context of online learning in the post-pandemic period which opens up new opportunities for academic dishonest behaviour, especially at the vocational school level with a concentration of expertise in Accounting and Financial Institutions. In addition, the dimension of pentagon fraud, which is the cause of academic dishonesty behaviour, focuses on the variables of pressure, opportunity, rationalisation, capability, and arrogance. Different from previous research such as research by Rahmayanti (2020) linked the pentagon theory of fraud to Islamic Banking Vocational School students' academic dishonesty behaviour in Tegal, and found that academic pressure, opportunity, rationalisation, ability, and religiosity and ethical factors led to such behaviours. Academic dishonesty can be minimised if students understand that there are binding academic rules and remain honest even outside the learning environment (Qudsyi et al., 2018; Citrawan et al., 2024). Pressure, opportunity, rationalisation, capability, and ethics have been studied for their influence on academic cheating behaviour. Pressure and capability were found to

have a positive and significant influence on academic cheating (Alfian & Rahayu, 2021; Utami & Purnamasari, 2021; Djaelani & Mokoginta, 2022). Results of the influence of opportunity and justification were not uniform in studies (Alfian & Rahayu, 2021; Djaelani & Mokoginta, 2022; Utami & Purnamasari, 2021). Ethics was identified as a critical consideration, with some studies reporting a negative influence on academic cheating Oktarina, (2021), while others reported a positive influence (Alfian & Rahayu, 2021; Utami & Purnamasari, 2021). The findings are indicative of the complex nature of academic cheating and the diverse influence of the pentagon aspect of cheating on a wide range of student populations.

Based on this background, this research attempts to uncover determinants of academic dishonesty behaviour among Sukoharjo Regency public and private vocational school students. Hopefully, the findings of this research will provide a clearer image compared to previous research, and become the basis for Business and Management Vocational School accounting teachers to formulate solutions in addressing the problem of academic dishonesty among students.

Method

This study is comparative causal research using a quantitative approach to determine whether there is an influence among variables. Comparative causal research examines how independent variables affect dependent variables and involves causal relationships among variables (Williams, 2007).

The research was carried out from January to July 2021 and took place at SMK Negeri 6 Sukoharjo and SMK Muhammadiyah Watukelir Sukoharjo. Some considerations regarding these schools as research places included (1) both have Accounting and Financial Institution (AKL) expertise programs and represent public and private schools, (2) equal ability regarding the national examination results in 2017, which indicated that the average scores of the two schools were not much different, with the average score of SMK Negeri 6 Surakarta was 62 and SMK Muhammadiyah Watukelir was 55.

The population in this study included 165 students of Grade XI Accounting and Institutional Finance (AKL), of whom 106 students came from SMK Negeri 6 Sukoharjo and 59 from SMK Muhammadiyah Watukelir Sukoharjo. The study sample was determined using the Krejcie & Morgan (1970) table, which shows the number of samples taken by 115 students. The sampling technique used was simple random sampling, considering the number of classes in Grade XI Accounting and Financial Institutions (AKL) SMK Negeri 6 Sukoharjo and SMK Muhammadiyah Watukelir Sukoharjo in Sukoharjo Regency.

The data collection technique in this study was a questionnaire in the form of statements that followed the measured dependent variable, academic dishonesty, and independent variables based on th pentagon frauds theory consisting of pressure, opportunity, arrogance, rationalisation, and ability. The development process of the questionnaires was carried out by referring to and modifying the descriptors and indicators on the dimensions of pentagon fraud and academic dishonesty from the Faradiza (2019), Billy et al. (2019), & Noor (2019). The questionnaire used was an approval questionnaire (Strongly Agree, Agree, Disagree, and Strongly Disagree) using a Likert scale with a score range of 1-4.

The questionnaire underwent a content validity test involving two experts from Semarang State University and Yogyakarta State University, whose expertise was in the quality of research instruments and understanding the fraud theory. The instrument was analysed with Aiken's V formula. The validity test results regarding the instrument showed that 30 items of the questionnaire instrument received an average score of 0.714. Based on Sugiharni & Setiasih's (2018)

statement, a validity score between 0.6-0.79 is included in the high validity category. At the same time, the reliability of the questionnaire instrument was tested using the Alpha-Cronbach reliability estimation method. The reliability test results showed that the reliability value of Alpha Cronbach was 0.786. Research instruments are reliable if the Alpha Cronbach value exceeds 0.6 (Padmayanti, Sujana, & Kurniawan, 2017). The questionnaire instrument of this study was reliable because the reliability value of 0.786 was greater than 0.6.

The quantitative data analysis (questionnaire results) was initially planned to be analysed using multiple regression analysis techniques. However, when the prerequisite test for data analysis did not meet the requirements of the classical assumption test on the linearity test. The quantitative data analysis (questionnaire results) was then analyzed using nonparametric statistics using the Kurskal-Wallis test, which could directly test all variables that were free from the independent variables. The Kruskal-Wallis test is a nonparametric statistical method used to assess differences among three or more independent sample groups on a single unnormally distributed continuous variable (McKight & Najab, 2010). This test extends the Mann-Whitney U test and serves as a nonparametric alternative to one-way ANOVA (McKight & Najab, 2010).

Results and Discussion

The research population involved 165 students, consisting of 106 Grade XI students of Accounting and Financial Institutions SMK Negeri 6 Sukoharjo and 59 Grade XI students of Accounting and Financial Institutions SMK Muhammadiyah Watukelir Sukoharjo. The study samples included 115 students, which was decided based on the calculations in the Krejcie et al. (1970) table. This research utilised a simple random sampling technique. All these students had the opportunity to complete a questionnaire about academic dishonesty. The following are descriptive statistical results based on the response results of the entire 115 research samples.

Table 1. Descriptive Statistical Output Results of the Academic Dishonesty Questionnaire Response Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Academic Dishonesty	115	8	16	24	19.37	2.170	4.708
Pressure	115	12	8	20	12.19	1.982	3.928
Chance	115	12	4	16	8.00	2.449	6.000
Rationalisation	115	18	6	24	11.60	3.120	9.733
Ability	115	12	4	16	7.23	2.178	4.743
Arrogance	115	15	5	20	9.00	2.747	7.544
Valid N (listwise)	115						

Table 1 shows that for the variable response of academic dishonesty, the average value of 115 students was 19.37, the standard deviation was 2.17, the variant was 4.708, the maximum value was 24, and the minimum value was 16. For the pressure variable, the average value was 12.19, the standard deviation was 1.982, the variance was 3.928, the maximum value was 20, and the minimum was 8. For the opportunity variable, the average value was 8.00, the standard deviation was 2.449, the variance was 6.000, the maximum value was 16, and the minimum value was 4. The rationalisation variable's average value was 11.60, the standard deviation was 3.120, the variance was 9.733, the maximum value was 24, and the minimum value was 6. For the ability variable, the average value was 7.23, the standard deviation was 2.178, the variance was 4.743, the maximum value was 16, and the minimum value was 4. For the arrogance variable, the average value was 9.00,

the standard deviation was 2.747, the variance was 7.544, the maximum value was 20, and the minimum value was 5.

Before the data analysis process, the research data underwent a prerequisite test first (classical assumption test), which began with a data normality test. The normality test of the data used the one-sample analysis method Kolmogorov Smirnov test. Finally, based on the data analysis, the normality test results are presented in the following table.

Table 2. Normality Test Results of the Research Data

One-Sample Kolmogorov-Smirnov Test		
		Unstandardised Residual
N		115
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	2.06763910
Most Extreme Differences	Absolute	.102
	Positive	.102
	Negative	-.056
Kolmogorov-Smirnov Z		1.095
Asymp. Sig. (2-tailed)		.181

Results in table 2 show the value of Asymp. Sig. of this study. Ghozali (2016) states that data are normally distributed when the Asymp value. Sig. is greater than the significance level value by 0.05. Since the calculated Asymp value. Sig. of the data from this study was 0.181; hence, the data were normally distributed. Therefore, the data could go to the data linearity prerequisite test.

Based on the linearity test data analysis, the Deviation from Linearity results value of the pressure variable was 0.010, the opportunity variable value was 0.000, the rationalisation variable value was 0.085, the ability variable value was 0.054, and the arrogance variable value was 0.319. The requirement passes the linearity test if the Deviation from Linearity value is greater than the significance level, which is 0.05 (Ghozali, 2016). For the variables of rationalisation, ability, and arrogance, the values of their Deviation from Linearity were greater than 0.05. Therefore, it could be concluded that the variables of rationalisation, ability, and arrogance had a linear relationship to academic dishonesty. While the pressure and probability variables had Deviation from Linearity values which were less than 0.05, meaning that they did not have a linear relationship to academic dishonesty. Therefore, these two-research data could not go further to the prerequisite test of data analysis (multicollinearity and heteroskedasticity test) nor use hypothesis tests through parametric statistical tests (t-test and F test).

The data from the study were then processed using nonparametric statistics through the Kruskal Wallis test, which can directly test all independent variables against dependent variables (Sundayana, 2018). Kruskal Wallis test results are as follows.

Table 3. Kruskal Wallis Test Results

Test Statistics[a,b]

	Pressure	Opportunity	Rationalisation	Ability	Arrogance
Chi-square	6.670	25.816	15.931	21.568	23.824
df	8	8	8	8	8
Asymp. Sig.	.573	.001	.043	.006	.002

a. Kruskal Wallis Test

b. Grouping Variable: Academic Dishonesty

Based on the Kruskal Wallis test results in Table 3, the value of Asymp. Sig. of the pressure variable was 0.573, the opportunity variable value was 0.001, the rationalisation variable value was 0.043, the ability variable value was 0.006, and the arrogance variable value was 0.002. The null hypothesis (H_0) will be rejected if there the p-value (Asymp. Sig.) < the critical region (degree of significance). Therefore, the hypothesis decision was to reject H_0 and accept the alternative hypothesis H_a, which meant that there was an influence of the independent variables on the dependent variables. If the p-value > the critical region (degree of significance), then the hypothesis decision is to accept H_0 and reject H_a or which means that there is no influence of the independent variables on the dependent variables (Assegaf, Mukid, & Hoyyi, 2019).

For the pressure variable, the p-value was 0.573, which was greater than 0.05. Therefore, the H_0 was accepted, and the conclusion stated that the pressure variable was not influenced by academic dishonesty in online Accounting learning of SMK Business and Management in Sukoharjo Regency. For the opportunity variable, the p-value value was 0.001, which was smaller than 0.05. The H_0 was rejected, meaning that the opportunity variable influenced academic dishonesty in online Accounting learning at Business and Management Vocational Schools in Sukoharjo Regency. For the rationalisation variable, the p-value was 0.043, which was smaller than 0.05. Hence, the H_0 was rejected, and the conclusion stated that the rationalisation variable affected academic dishonesty in online Accounting learning at Business and Management Vocational Schools in Sukoharjo Regency. For the ability variable, the p-value value was 0.006, which was smaller than 0.05, making the H_0 was rejected, and the conclusion was that the ability variable affected academic dishonesty in online Accounting learning of SMK Business and Management in Sukoharjo Regency. Finally, for the arrogance variable, the p-value was 0.002, smaller than 0.05. Thus, the H_0 was rejected, so the conclusion said that the arrogance variable affected academic dishonesty in online Accounting learning of Business and Management Vocational Schools in Sukoharjo Regency.

Therefore, it can be concluded that academic dishonesty in online Accounting learning of SMK Business and Management in Sukoharjo Regency, when seen from the dimensions of pentagon fraud, was influenced by opportunity, rationalisation, ability, and arrogance variables. Meanwhile, the pressure variable did not affect academic dishonesty in online Accounting learning for Business and Management Vocational Schools in Sukoharjo Regency. The results of this study support the research by Amalia & Nurkhin (2019), which states that there is a significant positive influence of academic pressure, opportunity, rationalisation, and ability, as well as smartphone usage toward academic dishonesty. Pressure, opportunity, rationalisation, and ability/competence were found to significantly influence academic cheating behaviour in the vast majority of cases (Agustina et al., 2022; Kurniawati et al. 2022). However, this study did not find that the pressure variable affected academic dishonesty; instead, arrogance did. Therefore, the variables that affected academic dishonesty in online Accounting learning were opportunity, rationalisation, and ability. Pressure variable that did not affect academic dishonesty has also been conveyed in the research by Ariani, Pusporini, & Priono (2018), which claimed that opportunity and rationalisation factors positively affect students' academic dishonesty behaviour. Contrary to the assumption that academic pressure

leads to cheating, some studies have also suggested that other factors may play a more significant role. Stiles et al. (2018) found that academic privilege is a strong predictor of cheating behaviour, while Menon & Sharland (2011) identified narcissism and exploitative attitudes as potential contributors. Interestingly, Usman & Izzati (2020) report that academic pressure significantly influences dishonest behaviour, contrary to findings from other studies. However, Choo & Tan (2023) observed that college students engage in sudden academic cheating when experiencing high perceived levels of stress and low perceived opportunities to cheat.

This study supports some of these results that the ability factor does affect academic dishonesty. Yulianto et al. (2020) stated that academic pressure, individual ability to cheat and academic procrastination positively affect academic dishonesty. Arfiana & Sholikhah (2021) stated that factors influencing academic dishonesty involved opportunities and ability variables. Among high-ability students, locus of control and academic self-concept influence dishonest behaviour with different patterns observed in honors and non-honors groups (Rinn et al., 2014). Similar to this study which found that opportunity and ability variables influenced academic dishonesty in online Accounting learning, the difference was that there were additional factors, namely rationalisation and arrogance variables, which affected these dependent variables.

In this study, the rationalisation variabel had a positive coefficient, making it a factor that influenced learners to commit academic dishonesty. Nurkhin & Fachrurrozie (2018) supported this result by explaining that rationalisation has a positive and significant effect on academic dishonesty. Thus, it can be said that students commit academic dishonesty for a particular reason or argument. Students who commit academic dishonesty will look for reasons why they commit it.

The opportunity also influenced students committing academic dishonesty based on the research results. The results of this study were in accordance with the research conducted by Nanda et al. (2019), which suggests that cheating can occur due to opportunity, rationalisation, ability, and arrogance. In their research, they mentioned that opportunities positively affect academic dishonesty. A person can commit academic dishonesty if he gets an opportunity and opportunity occur due to ineffective monitoring. In this study, the opportunity also had a significant effect on committing academic dishonesty. Thus, the bigger the opportunity gets, students will likely commit academic dishonesty. The study results were related to the theory of planned behaviour from the category of perceived behaviour, where there is a feeling of easiness or difficulty in doing something. In other words, a learner can commit academic dishonesty when he or she feels safe due to weak supervision. It is situations like these that the potential for students to cheat is high. Results of this research were in line with Ridhayana et al. (2018) study that states opportunity affects academic dishonesty behaviour.

Rangkuti (2011) also found that opportunity to cheat and remain unnoticed directly affects academic violations. Similarly, Bolin (2004) and Salsabilla & Uyun (2023) show that perceived opportunities are the strongest predictors of cheating behaviour. Opportunity and academic cheating are often mediated by attitudes towards cheating Bolin, (2004) and rationalisation (Salsabilla & Uyun, 2023). Academic dishonesty behaviour can easily occur if there is an opportunity. Opportunities occur when a system is weak, such as weak control and weak sanctions. Available facilities such as the internet are also an opportunity to practice academic dishonesty. Further, Zamzam et al. (2017) have also claimed that opportunity affects the academic dishonesty behaviour. In this case, it was stated that there may be an issue when a student feels that he has a set of circumstances and conditions under which he can practice academic dishonesty without facing any risk.

Bichler-Robertson et al. (2003) also demonstrated that the role of luck on cheating behaviour varies depending on the level of the student's self-control. To address this problem, the learning institution and individuals within the environment of the learning institution play an important role in developing policies in order to reduce opportunities for cheating, such as setting appropriate assessment rules and devising appropriate questions for the examination (Rangkuti, 2011). These findings emphasize the urgency of understanding and reversing the factors that produce the opportunity for academic dishonesty within the learning situation.

Another finding of the research was that arrogance also affected students in committing academic dishonesty. This was in accordance with research conducted by Utami & Adiputra (2021), which revealed that pressure, opportunity, rations, abilities, and arrogance positively and significantly affect academic dishonesty behaviour. Arrogant learners who feel that the sanctions given are too light and have a high ego to obtain high scores or other reasons supporting the cheating act. In this case, arrogance occurs when someone commits academic dishonesty because they have an arrogant nature (feeling that they can), wanting to achieve something at all costs and ignoring all academic rules. Thus, arrogance influences the occurrence of academic dishonesty.

Recent studies have examined the factors that influence academic cheating in online learning environments. Common behaviours include cheating and unauthorized collaboration during exams or assignments (Jatmika et al., 2022). Several factors contribute to academic cheating, including rationalisation, pressure, opportunity, and lack of academic ability (Jatmika et al., 2022; Kartika Ningrum & Maria, 2022; Kurniawati et al., 2022). Pressure and rationalisation have a positive impact on academic cheating, while ability has a negative impact (Ningrum & Maria, 2022). Opportunities, which often arise due to a lack of direct supervision and open internet access, are also significant factors (Jatmika et al., 2022; Kurniawati et al., 2022). However, findings on the influence of chance were inconsistent across studies (Ningrum & Maria, 2022). Pressure and rationalisation are positively correlated with academic dishonesty, while ability is negatively correlated (Ningrum & Maria 2022). Arrogance, one of the pentagon theory of cheating components, showed inconsistent results with some studies showing that there was no significant effect (Anindya et al., 2023; Kurniawati et al., 2022).

The findings suggest the complex nature of academic dishonesty in distance learning and the need for well-designed interventions. But the pressure factor was not identified to affect academic dishonesty within this research; the arrogance factor did. Hence, the factors that affected academic dishonesty during online Accounting learning were opportunity, rationalisation, and ability. This study did not explore other potential variables that may result in academic dishonesty, such as peer influence, student-faculty relations, or technological literacy. These are also potential variables that affect students' conduct in online classes. Future studies can explore these other variables, such as the influence of peer pressure, the effectiveness of online monitoring, and students' dispositions toward academic integrity. Further investigation of the effect of institutional policies, teacher involvement, and the climate of ethics in schools can provide useful insights to minimize academic dishonesty.

In order to minimise academic cheating among schools, especially those induced by opportunity factors, justification, competence, and conceit, there has to be a methodical and ethics-based solution. Firstly, in controlling opportunities, schools have to strengthen the surveillance system during examinations and assignments, both on and off the internet, and make tests more contextual and problem-solving-oriented in nature so that they cannot be imitated (Bachore, 2014). Second, to neutralize rationalisation, internalization of honesty values must be attained through character education, moral discussion, and reflection on the long-term consequences of cheating, as suggested by Miller et al. (2011) that awareness of academic rules can suppress the desire to cheat.

Third, students' abilities need to be facilitated in an easy way by tutoring, constructive criticism, and collaborative learning so that the students won't cheat due to a lack of knowledge (Mulatsih, 2020). Finally, in order to reduce students' arrogance and sense of impunity, schools need to discipline students strictly and fairly and cultivate a sense of modesty and responsibility through leadership programs and community services. This study suggests that arrogance has a significant role in academic cheating, hence it needs to be addressed with a strategy that encourages self-reflection and strengthens one's ethics (Wowra, 2007). This combined strategy is necessary so that the prevention of academic cheating is not just technical in scope, but also addresses the moral and psychological aspects of students.

Conclusion

Academic dishonesty refers to intentional deceptive behaviour by students on assignments and tests, typically done covertly and contrary to school policy. For online Accounting education, the most common forms of academic dishonesty were collaboration on individual assignments and cheating on tests. When analyzed according to the Fraud Pentagon Theory, academic dishonesty was significantly influenced by the opportunity, rationalisation, ability, and arrogance variables. However, the pressure variable was not discovered to have any effect. There were some limitations in this research, that as, the use of web-based questionnaires via Google Forms. This process limited the researchers from direct supervision and observation of respondents during data collection, resulting in unmet requirements for parametric analysis and the necessity of nonparametric statistical procedures. Subsequent research should consider enlarging the sample and using mixed methods (qualitative and quantitative) to gain more in-depth knowledge of students' attitudes and motivations. Additional research is also recommended to study other variables outside of the Fraud Pentagon model, e.g., peer pressure, online literacy, enforcement of school policy, teacher monitoring, and academic integrity education's influence. Including these variables could provide a more comprehensive understanding of the determinants of academic dishonesty in both online and offline learning environments.

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