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Exploring the antecedents of Student Academic Integrity: The Impact of Using Digital Technology Automated Short Essay Scoring (ASES) Assessment Models in Learning

Evi Susilawati[1]*, Hasrita Lubis[2], Sapta Kesuma[3], Ikbar Pratama[4], Imamul Khaira[5]

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ABSTRACT

Objective: The purpose of this study was to acquire a deeper understanding of the decision-making processes of Indonesian students confronted with moral dilemmas in an educational institution setting. The study uncovered and highlighted significant relationships between subjective norms, perceived behavioral control, attitudes toward, and intentions regarding academic integrity. In addition, the research revealed that the relationship between subjective norms and academic integrity behavior, as well as the relationship between perceived behavior control and academic integrity behavior, is moderated by students' intentions. **Methodology:** Stratified random sampling was utilized to ensure that the findings were applied to Indonesia's entire population of university students. The decision to collect data from 400 students was influenced by statistical power, effect magnitude, and available resources. SEM-PLS is utilized to analyze the data. **Results:** This study's findings indicate that several factors considerably influence Indonesian university students' ethical behavior. These elements include subjective norms, the perception of behavioral control, attitudes, and intentions. Based on the findings, it appears that the Automated Short Essay Scoring (ASES) component of digital technology could potentially mediate students' academic integrity aspirations and their subsequent actions. This suggests that the extent of ASES usage may influence the correlation between intentions and subsequent behavior. **Implications:** Significant implications exist for educational institutions and policymakers who prioritize nurturing a culture of academic integrity and increasing students' commitment to ethical behavior. The previous sentence listed these institutions and policymakers. **Novelty:** This study is among the first to examine academic integrity issues among Indonesian students.

[1] Universitas Islam Sumatera Utara, Medan, Sumatera Utara, Indonesia.
[2] Universitas Islam Sumatera Utara, Medan, Sumatera Utara, Indonesia.
[3] Universitas Haji Sumatera Utara, Sumatera Utara, Indonesia.
[4] Universitas Medan Area, Medan, Sumatera Utara, Indonesia.
[5] Universitas Haji Sumatera Utara, Sumatera Utara, Indonesia.
***Corresponding** Email: evisusilawati@fkip.uisu.ac.id

1.0. Background

Academic dishonesty encompasses a variety of behaviors, such as obtaining exam materials illegally, cheating on assessments, inappropriately sharing assignments, misrepresenting the ideas and work of others as one's own, plagiarizing, and fabricating documents. Academic dishonesty, such as plagiarism, has been reported at prestigious universities worldwide, including the University of North Carolina at Chapel Hill (Roy & Edwards, 2023). At the University of North Carolina at Chapel Hill, additional cases of academic misconduct have been documented. According to data collected by RAISE (Researching Academic Integrity and Student Engagement), a survey of 5,799 college students revealed that 89% of respondents agreed that academic dishonesty in college might increase the likelihood of future cheating behavior (Tabernero et al., 2015). Moreover, Cronan, Mullins, and Douglas (2018) emphasize that many students continue to engage in academic dishonesty despite widespread disapproval of such behavior. According to Caulfield, Lee, and Baird (2023), students believe that business professionals frequently give practical considerations precedence over ethical ones, leading them to believe that unethical actions may be required for career advancement. This phenomenon teaches students that unethical behavior may be necessary for career advancement. Students who acknowledge their academic dishonesty in an educational context may be more tolerant of unethical behavior in a professional setting.

According to the report by Stephens et al. (2021), between 65 and 82% of students have committed academic dishonesty at least once. This discovery is consistent with the findings of other researchers who have reached identical conclusions. According to Haney-Caron et al. (2023), the roughly 67% incidence of cheating has been deemed "unacceptably high" by researchers. This observation highlights the troubling prevalence of academic dishonesty Gross and Musgrave (2020). conducted a comprehensive study from 1962 to 2010 and presented various findings regarding educational dishonesty incidence, typology, and methods. The results of the investigation are detailed on pages 35 to 71 of the publication. According to research conducted by DiPaulo (2022), students' most frequently reported academic dishonesty is obtaining test questions or answers from peers who have already taken the exam and collaborating on homework assignments contrary to the teacher's instructions. In addition, students frequently report receiving test queries or answers from peers who have previously taken the same examination. Surahman and Wang (2022) said their online survey spanned from 2002 to 2010. It revealed that self-reported instances of academic dishonesty were lower than those reported in earlier research, albeit limited to previously identified forms of deception. The survey information was collected between 2002 and 2010. There are apprehensions regarding the students' trust in the confidentiality and security of their survey responses, so the authors advise exercising caution when adopting lower response rates. The preceding clause raised concerns regarding confidence. The authors Sabbagh (2021) make the crucial observation that although the rates of self-reported cheating are comparatively low, they are still of great significance and should not be ignored. The authors Eaton (2021) emphasize the significance of addressing academic integrity issues due to the likelihood that college students will assume leadership roles in various societal sectors. Education, medicine, the legal system, politics, and business are included in the abovementioned fields. According to Hedayati-Mehdiabadi (2022), establishing an unethical decision-making pattern among college students can negatively affect society as a whole. This phenomenon may have a negative impact on their future professional trajectories.

In the current climate of increased competition for college admissions, educators and policymakers are actively attempting to identify the most influential factors that contribute to students' academic and personal growth and development. Academic integrity is a significant quality due to its fundamental role in influencing education on college campuses and enhancing the reputation of higher education institutions. Academic integrity is essential in higher education institutions because it contributes to their reputation and standing (Janke et al., 2021). Evaluating a person's character is founded on various characteristics, such as accountability, deference, dependability, and sincerity. For a substantial amount of time, educators and individuals in positions of authority have recognized the significance of fostering a learning environment that encourages students' moral and ethical development. Academic dishonesty has received increased attention in recent years, necessitating the prioritization of character-building programs by higher education stakeholders to promote academic integrity (Collins, 2022).

Digital technologies offer numerous opportunities for enhancing the quality of educational assessment and broadening educational opportunities (Marbun et al., 2020). Tan (2023) argues that educational institutions and enterprises can utilize automated feedback to provide students timely feedback on their academic performance, yielding significant benefits. Incorporating digital tools in higher education enables a more accurate assessment of students' comprehensive progress regarding their competencies, comprehension, and required coursework. This is one of the most persuasive arguments favoring utilizing technological resources. According to Pan and Zhang (2021), digital tools can improve the quality and speed of evaluating numerous categories of work. This is the case because a computer can perform the evaluation. This makes it easier to conduct a comprehensive investigation.

The study of whether or not computers can effectively grade essays is referred to as "automated essay scoring" (AES). Since 1966, extensive research has been conducted on this subject. This method is often referred to as Automated Essay Scoring (AES). Essays are graded and ranked using automated assessment tools such as Project Essay Grader (PEG) based on attributes, directives, and syntax (Sathyabalan & Christian, 2022) In 2001, an open-source PEG implementation was evaluated using correlation analysis and human subjects. Several Automated Essay Scoring (AES) systems, such as Natural Language Processing (NLP) and the Bayesian Essay Test Scoring System (BESTY), have emerged in recent decades. Natural language translation (NLT) and image recognition (IRI) are two additional examples. Although the frequency with which each technique is used to evaluate these structures varies, they all rely on various well-established evaluation methods. According to Patil et al. (2022), modern AES employs analysis techniques based on regression.

To develop a student's individuality, providing a learning environment that promotes a sense of comfort and encourages the expression of personal opinions is essential. Establishing trust between various parties, such as educational institutions, instructors, and students, requires concerted efforts. A person's demonstration of honesty, competence, dependability, and altruism facilitates the formation of trust in them as a dependable collaborator (Brown, Yu, & Etherington, 2020). The extent to which students in higher education perceive trust in their instructors and colleagues significantly impacts their academic success and personal development. Susilawati and Khaira (2022) note that trust plays a crucial role in fostering relationships among disparate stakeholders and students;

however, there is a lack of research examining the impact of trust on students' learning and character. Consequently, the present study investigates the factors influencing the ethical decision-making processes of school-aged Indonesian pupils.

2.0. Literature Review

2.1. Automated Short Essay Scoring (Digital technology-based assessment Model)

Once installed and activated on a computer system, the Automatic Essay Grading (AES) program is a software application designed to analyze and evaluate various forms of written work, including essays. The evaluation procedure can be expedited and completed at a lower cost by utilizing its assistance. The perceived dependability and capacity to generate generalizable results of Automated Essay Scoring (AES) have piqued the interest of educational professionals, professors, testing organizations, and academic institutions in evaluating written materials (Susilawati et al., 2022). Regarding the accuracy and consistency of AES and other automated methods for assessing content, considerable research has been conducted. The analyses revealed a significant correlation between human evaluators' scores and those generated by Automated Essay Scoring (AES) systems. In contrast, the computerized nature of AES presents an opportunity for academic dishonesty, as students may be tempted to engage in unethical conduct and deceive. According to Gupta (2022), despite its limitations, the AES system is increasingly adopted by educators.

Despite the extensive variety of assessment strategies discussed in the academic literature, there have been few efforts to improve or adapt AES. Allis Page's 1996 Project Essay Grader (PEG) was among the first Automated Essay Scoring (AES) systems established at the College Board's request (Atrizka et al., 2020; Hussein, Hassan, & Nassef, 2019; Nu'man et al., 2020). The PEG intended to evaluate many essays using correlation while maintaining high precision. Intelligent Essay Assessors (IESs) are also included in the academic discussion; these programs grade papers using latent semantic analysis, a form of semantic text analysis. The academic community typically refers to these instruments as latent semantic analyzers. Due to their ability to analyze the text's linguistic characteristics, natural language processing (NLP) techniques are frequently utilized in the electronic evaluation of essays (Allen, Creer, & Poulos, 2021). The term "artificial intelligence" (AI) incorporates numerous software and hardware applications. The consensus holds that artificial intelligence (AI) is the most efficient essay evaluation method. Artificial intelligence (AI) is the study of how computers can be programmed to perform tasks that normally require human intelligence, according to Dong et al. (2020). The academic community is the source of this definition.

Researchers' definitions of assessment encompass a diverse range of activities conducted by educators and students to evaluate the efficacy of various instructional and pedagogical approaches. The purpose of summative assessment, also known as assessment of learning, is to provide educators with a comprehensive overview of the extent to which students have acquired knowledge over a specified period. In contrast, formative assessment, or assessment for learning, occurs in real-time during the learning process and aims to influence and inform future lessons with feedback. Menéndez et al. argue that incorporating formative assessment is of the utmost significance in continually motivating students to improve their academic performance.

Assessors frequently use online examinations for various purposes, including providing students with developmental evaluations, evaluating student performance, and facilitating statewide assessments. According to Kaipa (2021), examination items of this nature typically include multiple-choice and short-answer questions. The evaluation of students in postsecondary education has undergone significant changes due to the development of numerous technological modalities. Governments worldwide actively endorse and promote digital technology due to its ability to provide efficient solutions to various problems and facilitate novel approaches to project completion. Technology implementation in evaluating students in higher education has witnessed several stages of development. Initially, the laptops of the students were used to distribute the lectures. In the second phase of the evaluation process, we incorporated various technological components, such as non-traditional exhibition styles and automated software. Brandi et al. (2020) state that the third stage involves deploying simulation- and interaction-based performance measurement systems. The present study used artificial intelligence (AI) to determine the impact of Digital Technology-Based Measurement (DTBM) on students' personalities.

3.0. Conceptual Framework

Past research on academic integrity has investigated a wide range of questions, such as the frequency of violations, the types of violations, the reasons for cheating, the consequences of cheating, and the solutions to the problem. Verma et al. (2021) have produced a comprehensive survey of AI-related research in their scholarly publication. These investigations were conducted to acquire a deeper understanding of the nature of academic dishonesty and to develop strategies for combating it in the classroom. Ellis et al. (2020) published a study that examined the prevalence of academic dishonesty, its contributing factors, and potential solutions to the problem. Many college and university students have admitted to engaging in academic dishonesty. Cheating has also been identified as an issue at the professional and graduate school levels.

As a consequence of changing attitudes toward dishonesty, some forms of cheating that individuals admit to engaging in have decreased. Peer pressure and other ethical influences, such as the implementation of an honor system, can significantly affect an individual's decision to deceive. Evidence shows that graduate and professional-level pupils engage in academically dishonest practices. According to Alam (2021), academic dishonesty has been a pervasive problem in the classroom for a considerable time. This is corroborated by records of incidents of cheating dating as far back as 1941. There may be a substantial discrepancy between the reported rates of deception and the actual rates of cheating, which must be kept in mind. Fritz et al. (2023) assert that variations in research estimates are attributable to differences in study designs, deceptive definitions, operationalization, and periods examined. The authors highlight the possibility that students may fear being caught engaging in academic dishonesty, resulting in a possible lack of honesty in their responses to surveys about such conduct out of concern that their answers may be disclosed to the educational institution. This phenomenon can be ascribed to students' fear that their responses will be shared with the educational institution. It is plausible that individuals' self-reported instances of academic dishonesty are influenced by social desirability bias. Burchett, Sellbom, and Bagby (2023) discovered that individuals may engage in more deliberate processing of their responses in the context of self-report measures when they perceive a potential threat to their social desirability.

Nonetheless, this specific concern might not always influence the formulation of the concrete response. The variation in reaction time may depend on an individual's perception of how the news will affect their sense of self. Practitioners and academics should exercise caution when interpreting research outcomes using self-reported data obtained through dishonest means.

3.1. AI Violation Intention: An Extended TPB Model with Moral Obligation and Past Behavior Development of Hypotheses

Understanding the underlying causes of academic integrity (AI) violations is important for educational institutions and business organizations. Extensive research has been conducted to understand the underlying causes of individuals' propensity to engage in deceptive practices and to develop effective strategies to prevent such behavior. This study aims to improve understanding of the factors influencing the likelihood of academic integrity violations among novice business scholars. The focus of the study will be the phenomenon of collaborative assignments and academic dishonesty through plagiarism. The Theory of Planned Behavior (TPB) has been utilized in previous research, such as Al-Nuaimi et al.'s (2021) studies, to explain and comprehend various behaviors, including academic dishonesty. Considering the abovementioned variables, a model was developed to comprehend the rationale behind AI transgressions.

As demonstrated by their deliberate attempt to compromise the academic integrity of their educational institution, the morality of an individual's intentions can vary. The present investigation concentrates on propensity instead of behavior, which is the standard approach in behavior research. This procedure is carried out so that results can be compared. The intention is a highly specific construct for predicting behavior because it incorporates the motivational factors that influence behavior, according to Choi and Johnson (2019).

According to the Theory of Planned Behavior (TPB), an individual's disposition is the most reliable predictor of their future behavior, and it substantially impacts TPB. The concept in question has been circulating for a considerable amount of time, and a significant body of literature in social psychology supports the contention that attitude is the most important construct (Vertovec, 2021). These research works can be found in a large collection of literature, which can be accessed at this location. Most research studies examining the relationship between attitudes and subsequent behavior have consistently shown that attitudes play an important role in predicting future behavior (Tian, Zhang, & Li, 2020). A person's disposition incorporates not only their affective response to the outcomes of their behavior but also their cognitive anticipation of the potential consequences of such behavior. Students who believe cheating is acceptable or can elude detection are significantly less likely to be caught than their counterparts who think otherwise.

In contrast, those who believe cheating is morally reprehensible or anticipate severe consequences are less likely to engage in such behavior. According to an analysis of 30 studies by Kushwaha et al. (2022), attitude is the most reliable predictor of behavior. Consequently, a person's disposition is crucial when determining their intent to breach AI.

An individual's subjective norm is their evaluation of the level of conformity expected of them about their peers' behavior. Yusliza et al. (2020) hypothesize that an individual's

perception of their significant others' beliefs regarding their engagement in a particular behavior significantly determines their behavior. Previous research indicates that an individual's subjective norm significantly affects the formulation of their behavior and intentions (Allah Pitchay et al., 2020; Amar & Pratama, 2020; Ursavaş, Yalçın, & Bakır, 2019). In situations involving instances of academic dishonesty, students may be faced with contradictory behavioral expectations. Members of certain peer groups may view dishonesty as a violation of social norms, while members of other peer groups may approve of it as a means to obtain an advantage or circumvent rules. This influence is evident in overt and covert communication forms, including conversations. The influence is evident in both modes of communication. Both methodologies can demonstrate this effect (Bansal et al., 2021). How individuals are raised by their parents and other influential caregivers may significantly influence their attitudes toward dishonest behavior. Some may dissuade such conduct, whereas others may take a more lenient stance toward those who engage in it. Peer and/or parental attitudes and behaviors can significantly impact students' mindsets and behavior.

It is hypothesized that the evaluation of subjective norms may have a dissuasive effect on the propensity to violate academic integrity when influential individuals maintain an unfavorable stance toward dishonest behavior. The likelihood of students engaging in deceptive behavior is influenced by social pressures exerted by their peers and significant adults, especially when they strongly disapprove of such behavior (Ifeagwazi et al., 2019). Understanding the consequences of unethical behavior in academic integrity has the potential to deter students from engaging in such conduct. Acknowledging that the subjective norm operates within a larger social context and may vary across diverse cohorts and individuals is essential (Gosnell, Gill, & Voyer, 2019). Peer influence can vary based on the cultural standards and values of the surrounding community. An individual student has the potential to be a member of multiple social organizations, each of which may have distinct norms and standards regarding academic honesty. Similarly, variables such as cultural heritage, level of education, and socioeconomic status can moderate the effect of parental figures and other primary caregivers.

To facilitate effective intervention and promote ethical behavior among students, it is essential to understand the effect subjective norms have on academic dishonesty violations. Establishing a welcoming environment within educational institutions, devoid of societal influences and conventions that promote academic dishonesty, is a viable method for reducing instances of academic dishonesty. A climate of candor and accountability can be fostered by dialogues and educational programs that emphasize the importance of upholding academic integrity, ethical conduct, and the repercussions of academic malfeasance (Forman, Comley, & Bibi, 2022). Ultimately, a student's perception of socially acceptable norms significantly impacts their propensity to engage in academic dishonesty. The assessment of subjective norms, derived from the perspectives and actions of influential individuals, can significantly affect students' perceptions of societal expectations and their propensity to engage in unethical behavior, such as academic dishonesty. Educational institutions can do more to promote ethical behavior and cultivate a climate of academic honesty in the societies in which they operate by increasing students' capacity to comprehend and interact with subjective social norms.

Ajzen and Driver (1991) refers to a person's subjective evaluation of how simple or difficult it is to perform a specific behavior as their "perceived behavior control" (PBC). According to Ajzen and Driver (1991), the prevalent perception consists of responsibility and difficulty. This concept refers to an individual's realization that they are accountable for the results of their actions. Academic integrity violations are a prominent example of a problem that can be investigated using PBC because PBC focuses on an individual's propensity to engage in dishonest behavior despite their positive attitude and subjective norms. Because violations of academic integrity are a prominent example of a problem that can be investigated using PBC, this is the case.

PBC concentration is susceptible to many external variables and environmental conditions. A lower percentage of suspected instances of plagiarism may indicate that effective measures are in place to prevent academic dishonesty (Adkins & Joyner, 2022). Educational institutions employ a variety of methods to avoid academic dishonesty among students, including the implementation of plagiarism detection software, the enforcement of stringent surveillance protocols, and the incorporation of unpredictable test items. Implementing these safety measures creates obstacles that make it more difficult for dishonest students to engage in academic misconduct. Individuals may believe they have less control over their ability to uphold academic integrity if preventative measures are effective. Consequently, academic integrity may be compromised.

In contrast, a high level of perceived behavior control (PBC) may indicate the absence of proactive measures or the presence of a permissive environment that encourages unethical behavior. In academic settings where monitoring is lax, test and paper banks are easily accessible, and instructor materials are readily available, students who violate academic integrity standards may view their misconduct as more manageable (Lynch et al., 2021). When there is a lack of monitoring mechanisms and individuals have access to resources that facilitate illegal behavior, individuals may be more brazen in violating laws.

Individuals' behavior and intentions toward academic integrity violations are substantially influenced by their perception of their level of control over violations. When students believe they have greater control over the contextual factors that surround them, they are more likely to harbor the intent to violate academic integrity (DiPaulo, 2022). Individuals may experience a diminished sense of agency and reduced motivation to engage in academic misconduct if they perceive preventive measures and controls as dependable and robust. This is because they believe they have a low probability of being apprehended.

Self-perceptions and beliefs play a role in determining how much control an individual feels they have over their behavior. Individuals' self-efficacy, which refers to their conviction in their ability to perform a given task and their fundamental principles, can impact their perceived level of behavior regulation (Surahman & Wang, 2022). Students with a profound comprehension of the importance of academic integrity and a strong sense of personal morality may believe they have more control over their actions and be less likely to engage in academic dishonesty.

Understanding perceived behavioral control can help higher education institutions develop more effective strategies for preventing and combating academic integrity violations. By instituting measures that improve prevention, monitoring practices, and fostering a culture that prioritizes and advocates for academic integrity, institutions can give students

greater control over their educational experiences (Bowden, Tickle, & Naumann, 2021). Furthermore, establishing a safe environment that fosters self-confidence and emphasizes ethical behavior may reduce students' propensity to engage in academic dishonesty.

One factor that can help explain why some pupils are more likely to cheat than others is the degree to which individuals have confidence in their ability to exercise self-control. Several factors influence a person's perception of their power, including the prevalence of environments that encourage dishonesty, the effectiveness of preventative measures, and the consistency of a person's principles and convictions. Exam plagiarism can be reduced, and academic honesty can be enhanced if teachers take the time to understand their students' self-efficacy beliefs and then work to strengthen them.

The preponderance of incoming first-year students' "Past AI Behavior" (PB) instances of academic dishonesty occurred during their time in high school. Not only does it reveal their dishonest tendencies, but it also demonstrates that they are well-versed in the various techniques used to deceive others. Since AI has been deceived so frequently, it is conceivable that humans are now better equipped to plan and execute cheating attempts (Bozkurt et al., 2023). People who have previously cheated may have learned from their errors which strategies are most likely to produce positive results, thereby increasing the likelihood that they will cheat again. Students can better understand the behaviors and techniques that will help them cheat in school by reflecting on past experiences and drawing the appropriate conclusions.

According to the findings of several studies, the frequency of past behavior influences present and future behavior. In the context of academic integrity, the likelihood that a student will commit academic integrity violations in high school may be predictive of the possibility that they will commit academic integrity violations in college (Balkin et al., 2023; Vandiver, 2022). If an individual has a history of violating AI rules, they may be likelier to do so. It is essential to remember that past actions, or the frequency with which they occur, can influence and even diminish future efforts, regardless of intentions. This is something that must always be kept in mind. It is widely acknowledged that the development of habits over time is the propelling force behind this effect. Theoretically, according to Ajzen and Driver (1991), knowing the frequency with which an action was performed in the past does not tell us much about the factors that cause that action to be repeated. This is the conclusion we can derive from the available information. Instead, he argues that unstable normative and control beliefs, fragile attitudes and intentions, inadequate planning, and several other factors all contribute to limitations on rational action. However, contrary to Ajzen's view, research shows that previous behavior does influence intentions and subsequent behavior. Given these findings, it is reasonable to assume that individuals who have previously violated AI rules will continue to do so in the future. Even after accounting for the other factors outlined by Ajzen, this suggests that a person's past behavior is a strong predictor of whether they will commit AI violations. This holds even after considering the other factors that Ajzen outlines.

To address concerns about academic dishonesty, one must have a thorough comprehension of the impact that AI's past behavior has had. With this information, educational institutions can develop and implement more effective educational programs and interventions to assist students in kicking their deception habits. Institutions can help students with a history of academic integrity violations if they provide the resources

necessary to develop academic success strategies consistent with ethical conduct. In addition, it is possible to reduce the likelihood of recurrent offenders engaging in academic dishonesty by fostering an environment that places a premium on academic integrity and provides opportunities for second chances. In conclusion, a person's history of academic integrity-violating behavior is a significant factor in determining the likelihood that they have engaged in such behavior in the past (Roy & Edwards, 2023). Integrity in academic work can be promoted in educational institutions such as schools and universities by incorporating students' pasts into corrective and preventive programming. To effectively resolve AI violations and establish a learning environment that is both secure and compliant with ethical standards, one must be aware of the outcomes of one's previous actions.

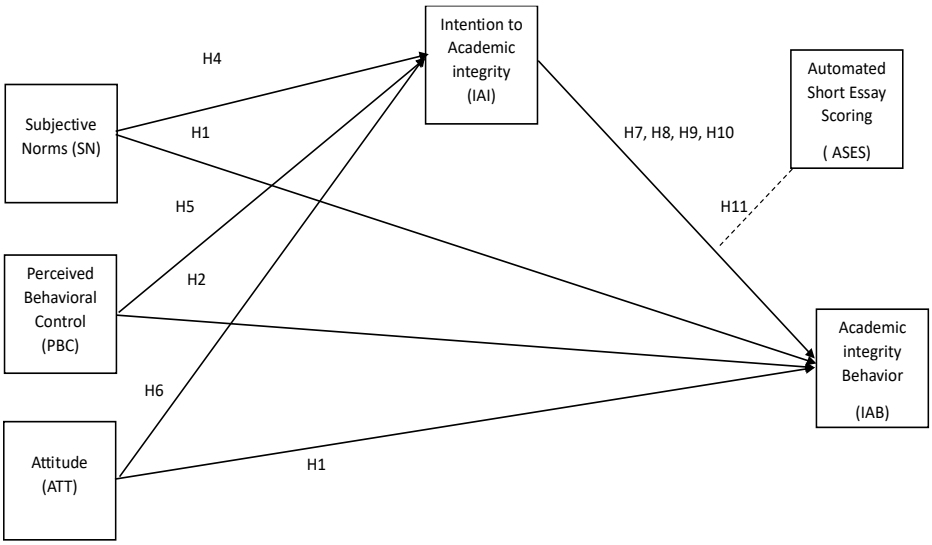

Figure 1: *Conceptual Framework*

H1: *SN significantly impacts academic integrity behavior (IAB).*
H2: *PBC significantly impacts academic integrity behavior (IAB).*
H3: *ATT significantly impacts academic integrity behavior (IAB).*
H4: *SN has a significant impact on the intention to academic integrity (IAI)*
H5: *PBC has a significant impact on the intention to academic integrity (IAI)*
H6: *ATT significantly impacts the intention to academic integrity (IAI).*
H7: *Intention to academic integrity (IAI) significantly impacts academic integrity behavior (IAB).*
H8: I*ntention to academic integrity (IAI) mediates the relationship between the SN and academic integrity behavior.*
H9: *Intention to academic integrity (IAI) mediates the relationship between the PBC and academic integrity behavior.*
H10: *Intention to academic integrity (IAI) mediates the relationship between the ATT and academic integrity behavior.*
H11: *Automated short essay scoring (ASES) moderates the relationship between the intention to academic integrity (IAI) and academic integrity behavior.*

4.0. Methodology

This study examines the impact of Digital Technology Automated Short Essay Scoring (ASES) evaluation models on academic integrity among Indonesian university students. This research employed a survey instrument using a seven-point Likert scale for data collection. A stratified random sample of 400 Indonesian college students is chosen to ensure that the results represent the entire population of interest.

The focus of this investigation is the student population enrolled in Indonesian universities. This study investigates the impact of ASES assessment models on instances of academic dishonesty by analyzing the perspectives, behaviors, and experiences of a particular group of individuals. The academic disciplines and cultural backgrounds of university students in Indonesia are notably diverse. This study's primary objective is to comprehensively understand the factors influencing intellectual honesty among university students in the context of digital technology implementation for evaluation purposes.

Stratified random sampling was utilized to ensure that the findings were applied to the entire population of university students in Indonesia. The decision to collect data from 400 students was influenced by statistical power, effect magnitude, and available resources. A power analysis was conducted to determine the sample size required to draw reliable conclusions regarding the influence of ASES assessment models on classroom integrity. The selected sample size is deemed adequate regarding statistical power, considering logistical constraints and the need for precise population parameter estimation.

Utilizing a questionnaire with a seven-point Likert scale, the data is collected. The prospective survey aims to collect data on academic integrity constructs using ASES assessment models, particularly emphasizing the Theory of Planned Behavior (TPB) (Ajzen & Driver, 1991). Intentions, subjective norms, perceived behavioral control, and perceived behavioral control are included in the survey. Using the Likert scale, participants could indicate their level of agreement or disagreement with each statement, revealing important information about their attitudes and behaviors.

5.0. Results

The study used SEM-PLS for data analysis. SEM-PLS is a two-step process, namely the measurement model and structural model. The measurement model of the current study is shown in Figure 2 below.

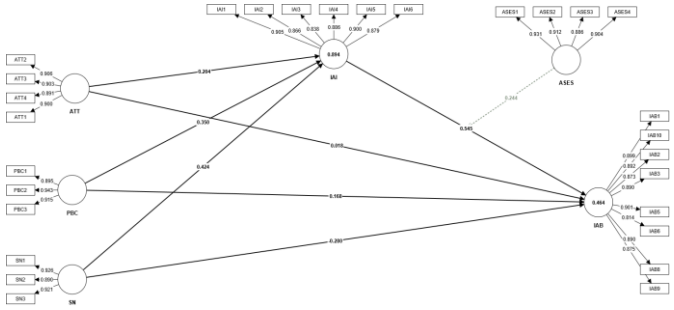

Figure 2: *Measurement Model*

The outer loadings of the current framework are shown in Table 1. The item with loading less than 0.70 are deleted from the analysis

Table 1

Measurement Model

	ASES	ATT	IAB	IAI	PBC	SN
ASES1	0.931					
ASES2	0.912					
ASES3	0.886					
ASES4	0.904					
ATT1		0.900				
ATT2		0.906				
ATT3		0.903				
ATT4		0.891				
IAB1			0.899			
IAB10			0.892			
IAB2			0.873			
IAB3			0.890			
IAB5			0.901			
IAB6			0.814			
IAB8			0.890			
IAB9			0.875			
IAI1				0.905		
IAI2				0.866		
IAI3				0.838		
IAI4				0.886		
IAI5				0.900		
IAI6				0.879		
PBC1					0.895	
PBC2					0.943	
PBC3					0.915	
SN1						0.926
SN2						0.890
SN3						0.921

The reliability of the study's framework is shown in Table 2 below. The results indicate that the framework has no reliability issue, as all the values of reliability analysis are greater than the threshold values.

Table 2

Reliability Analysis

	Cronbach's alpha	(rho_a)	(rho_c)	(AVE)
ASES	0.929	0.935	0.950	0.825
ATT	0.922	0.922	0.945	0.810
IAB	0.958	0.961	0.965	0.774
IAI	0.941	0.943	0.953	0.773
PBC	0.907	0.909	0.941	0.843
SN	0.899	0.902	0.937	0.833

The validity analysis of the current study is shown in Table 3 below. The results of the current study indicate that all the diagonal values are greater than the lower values and confirm discriminant validity.

Table 3

Validity Analysis

	ASES	ATT	IAB	IAI	PBC	SN
ASES	**0.900**					
ATT	0.873	**0.900**				
IAB	0.727	0.803	**0.880**			
IAI	0.691	0.805	0.774	**0.879**		
PBC	0.627	0.859	0.749	0.808	**0.838**	
SN	0.680	0.823	0.726	0.828	0.805	**0.812**

In Structural Equation Modelling (SEM) with Partial Least Squares (PLS), bootstrapping is a useful technique for assessing the validity and significance of the model's parameters. Multiple bootstrap samples are produced by randomly selecting and replacing observations from the initial dataset. Several samples' worth of data are utilized to estimate a model's parameters, resulting in a range of possibilities for each. The statistical significance of a model's relationships can be determined by examining the distribution and calculating confidence intervals and p-values. Bootstrapping is utilized in SEM-PLS to reduce the influence of sampling variation and bias, thereby enhancing the validity and reliability of the results. Figure 3 demonstrates the structural model of the present investigation.

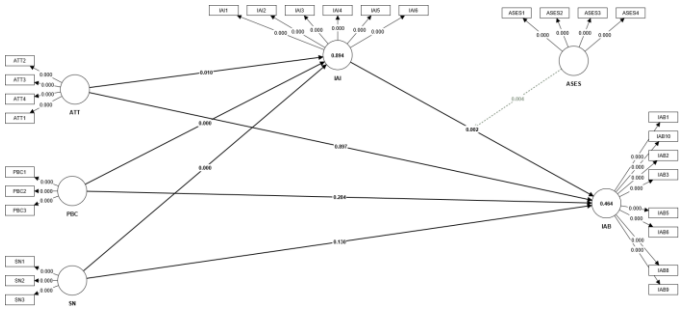

Figure 3: *Structural Model*

The results of the direct paths in our structural model are shown in Table 4 below. The results indicate that all the direct paths except ATT -> IAB and SN -> IAB are accepted significantly.

According to the study's findings, students' perceptions of their own control over such decisions have a significant impact on their academic integrity behavior (IAB). According to the statement, individuals' adherence to academic integrity practices is influenced by their moral judgment and sense of agency. According to research, students who perceive a greater degree of autonomy in their learning environment are more likely to exhibit ethical behavior.

The study's results support Hypothesis 4, indicating that an individual's intentions to uphold academic integrity (IAI) are substantially influenced by their subjective norms (SN). This discovery provides additional evidence that an individual's preconceived beliefs regarding the expected standards of academic integrity substantially impact their ethical behavior. Students' perceptions of societal support for academic integrity correlate with students' stated intentions to behave honestly in the classroom.

In addition, the results demonstrate that perceived behavior control (PBC) has a statistically significant effect on internet addiction (IAI), thus validating hypothesis 5. According to the proposition mentioned above, students' confidence in their ability to exercise self-restraint and make ethical decisions significantly influences their likelihood of engaging in academic integrity practices. There is a correlation between students' perceived level of control over their actions and their propensity to demonstrate sincere academic endeavors in the classroom.

The findings indicate a significant correlation between changes in attitudes (ATT) and changes in academic integrity intentions, which supports Hypothesis 6 (H6). This hypothesis states that students' positive evaluations of academic integrity significantly impact their ethical intentions. There is a correlation between positive attitudes toward academic integrity and an increased commitment to ethical behavior in the educational setting.

The findings highlight the significance of subjective norms, perceived behavior control, and attitudes influencing students' intentions to engage in academic integrity practices. Improving understanding of these variables would permit the development of interventions and strategies to promote academic integrity and ethical behavior among students.

Table 4

Direct Results

	(O)	(M)	(STDEV)	(|O/STDEV|)	P values
ATT -> IAB	0.129	0.129	0.147	0.881	0.379
ATT -> IAI	0.204	0.206	0.080	2.561	0.010
IAI -> IAB	0.545	0.542	0.179	3.040	0.002
PBC -> IAB	0.358	0.356	0.147	2.434	0.015
PBC -> IAI	0.350	0.352	0.070	4.990	0.000
SN -> IAB	-0.049	-0.044	0.189	0.259	0.795
SN -> IAI	0.424	0.419	0.092	4.609	0.000

The mediation analysis results are shown in Table 5 below and indicate that all hypotheses except ATT -> IAI -> IAB are accepted significantly.

The results provide support for Hypothesis 8, indicating the existence of a mechanism that mediates the relationship between subjective norms (SN) and academic integrity behavior. This mechanism is made possible by IAI's role as a mediator. According to Ruangkanjanases et al. (2020), ethical intentions serve as a mediator in explaining the relationship between subjective norms and academic integrity behavior. A direct correlation exists between students' subjective norms regarding academic integrity and their propensity to adhere to ethical principles, increasing educational integrity practices.

In addition, the results indicate that Hypothesis 9 is supported, demonstrating a significant relationship between academic integrity conduct and both perceived behavioral control (PBC) and internalized academic integrity (IAI) via IAI. The statement asserts that ethical intentions mediate the relationship between perceived behavior control and academic integrity behavior. There is a correlation between the level of commitment to educational integrity principles and the likelihood that students will demonstrate academic integrity behaviors. There is a correlation between students' perception of control over their actions and decisions and their propensity to accept responsibility.

According to the present study's findings, the relationship between subjective norms and academic integrity behavior, as well as the relationship between perceived behavior control and academic integrity behavior, is significantly influenced by the intention to engage in academic integrity behavior. Consideration of intention as a mediator enables a comprehensive comprehension of the influence of students' subjective norms and perceived behavioral control on their engagement in academic integrity practices. According to the findings, Academic integrity requires interventions to address students' ethical intentions.

Table 5

Mediation

	(O)	(M)	(STDEV)	(|O/STDEV|)	P values
SN -> IAI -> IAB	0.231	0.223	0.083	2.793	0.005
ATT -> IAI -> IAB	0.111	0.113	0.062	1.796	0.072
PBC -> IAI -> IAB	0.191	0.193	0.080	2.383	0.017

The results of the analysis of moderation are presented in Table 5. According to the findings, ASES moderates the relationship between IAI and IAB.

The results indicate that the implementation of Digital Technology Automated Short Essay Scoring (ASES) moderates the relationship between academic integrity intention (IAI) and academic integrity behavior (IAB). This proposition implies that the influence of IAI on the IAB may vary depending on the extent to which ASES is utilized during the evaluation process.

Table 6

Moderation

	(O)	(M)	(STDEV)	(|O/STDEV|)	P values
ASES x IAI -> IAB	0.244	0.250	0.084	2.905	0.004

6.0. Conclusion

This study aimed to examine the factors that influence the ethical decision-making processes of school-aged Indonesian pupils. A statistically significant relationship was discovered between the direct and indirect effects. Significant relationships were found between subjective norms, perceived behavior control, and academic integrity attitudes. According to the study's findings, students' intentions moderate not only the relationship between subjective norms and academic integrity behavior, but also the relationship between perceived behavioral control and academic integrity behavior.

The findings suggest that the Automated Short Essay Scoring (ASES) feature of digital technology has the potential to serve as a bridge between students' academic integrity intentions and their actual behavior. This indicates that the amount of ASES utilized may influence the relationship between intentions and actions.

Subjective norms significantly influence the ethical behavior of university students in Indonesia, perceived behavioral control, attitudes, and intentions, according to the findings of this study. In addition, our comprehension of the factors that influence students' classroom honesty has been enhanced due to these findings. Additional research is required to determine the function of alternative moderators in the correlation between academic integrity intention and behavior. By persistently investigating and resolving concerns regarding students' academic dishonesty, educational institutions can cultivate an environment that encourages honesty, responsibility, and equity in the classroom.

7.0. Policy Implications

In addition, policymakers must consider the findings of this investigation when drafting regulations and protocols pertinent to evaluation methodologies and academic integrity. Individuals can facilitate the development of protocols for the ethical implementation of technology in the evaluation process by emphasizing the significance of maintaining academic integrity when utilizing digital tools.

The study's findings highlight the significance of establishing a secure environment, nurturing ethical behavior among students, and promoting responsible technology use to cultivate an academic integrity climate. By considering and mitigating these consequences, educational institutions and governing bodies can facilitate the development of scholarly communities that exhibit ethical behavior, accountability, and efficacy.

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