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Academic Moral Reasoning and Digital Integrity among Pre-Service Teachers in the AI Era

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Abstract. The rapid adoption of artificial intelligence tools in higher education has created significant ethical challenges among pre-service teachers, particularly related to academic dishonesty, plagiarism, unauthorised content generation, and irresponsible use of generative AI platforms such as OpenAI. As future educators, pre-service teachers are expected to demonstrate strong moral judgement, academic honesty, and responsible digital behaviour in increasingly technology-driven learning environments. However, prior studies on academic integrity have primarily emphasised technological controls, institutional regulations, plagiarism detection systems, and digital surveillance mechanisms while overlooking internal psychological and moral mechanisms that shape ethical decision-making in digital contexts. This gap becomes increasingly important as AI technologies continue to normalise shortcut learning behaviours among university students. Drawing upon Lawrence Kohlberg's Moral Development Theory and James Rest's Ethical Decision Model, this study investigated the effects of workplace spirituality and emotion regulation on digital integrity through academic moral reasoning among pre-service teachers in Indonesia. Using a quantitative research design, data were collected from 312 pre-service teachers who actively utilised artificial intelligence tools in academic activities. The data were analysed using SmartPLS to examine both direct and indirect relationships among variables. The findings revealed that workplace spirituality and emotion regulation significantly influenced academic moral reasoning. Academic moral reasoning also demonstrated a significant positive effect on digital integrity and mediated the relationship between both antecedent variables and digital integrity. This study contributes to AI ethics, teacher education, and academic integrity literature by highlighting moral reasoning as a critical mechanism for promoting responsible technology use and informing ethical curriculum development for future educators in the era of artificial intelligence.

Keywords: *Digital Integrity, Academic Moral Reasoning, Artificial Intelligence, Pre-Service Teachers, Workplace Spirituality*

INTRODUCTION

The growing use of generative AI platforms such as OpenAI in academic activities has changed the way pre-service teachers prepare assignments, materials, and evaluation tools, while simultaneously giving rise to new ethical challenges for the future teaching profession [1]. Recent research notes that academic integrity in the generative AI era can no longer be safeguarded through technological monitoring alone, but instead requires the strengthening of individuals' moral-reasoning capacity as the foundation for ethical decision-making [2].

This issue becomes critical in pre-service teacher education, as these students will later serve as role models of digital integrity for their pupils. Studies show that research on pre-service teachers' moral reasoning remains largely confined to conventional moral-education interventions, with limited attention paid to ethical dilemmas arising from digital technology and generative AI [3], [4]. Academic studies have highlighted the importance of individuals' psychological and spiritual foundations, such as workplace spirituality and emotion regulation, as deeper antecedents of moral capacity than institutional rules alone [5], [6].

The core problem addressed by this study is how workplace spirituality and emotion regulation influence pre-service teachers' digital integrity through academic moral reasoning as a mediator. Lawrence Kohlberg's Moral Development Theory explains that individuals' moral reasoning develops in stages alongside cognitive maturity and reflective experience with ethical dilemmas [7]. James Rest's Ethical Decision Model extends this idea through four components: moral sensitivity, moral judgment, moral motivation, and moral character that together bridge moral reasoning with actual conduct [4]. Workplace spirituality provides meaning and value orientation that strengthen individuals' moral sensitivity [5], while emotion regulation enables individuals to manage impulsive urges so that moral judgement can be exercised more maturely [6].

The literature review reveals several research gaps. Empirically: first, research on workplace spirituality among teachers has largely focused on work engagement and organisational behaviour, without addressing technology-related academic moral reasoning [8]. Second, studies on pre-service teachers' emotion regulation have concentrated on psychological well-being and learning engagement, with few linking it to digital integrity [6]. Third, research on digital integrity in the generative AI era has largely focused on technological cheating detection rather than on the psychological-spiritual antecedents that shape it [1].

Methodologically: first, most studies on pre-service teachers' moral reasoning are qualitative or short-term interventions without testing a multivariate structural model. Second, workplace spirituality and emotion regulation are rarely tested together as dual predictors within a single SEM model [5]. Third, research on digital integrity has rarely used SmartPLS to simultaneously test the mediating effect of academic moral reasoning across populations of teacher-education students from various study programmes [2].

Conceptually: first, the integration of Kohlberg's Moral Development Theory and Rest's Ethical Decision Model has rarely been combined with spiritual-emotional constructs to explain digital integrity. Second, digital integrity is more often understood as technical compliance with institutional policy than as the outcome of mature moral reasoning [1]. Third, the role of academic moral reasoning as a mediator between psychological-spiritual resources and ethical digital behaviour remains largely unexplored conceptually [4].

This study builds on Rest et al.'s [4] model of moral reasoning and extends Alipour et al.'s [5] findings on the link between spirituality and moral cognition, positioning academic moral reasoning as a mediator between workplace spirituality, emotion regulation, and digital integrity among pre-service teachers who are active users of generative AI. This development is grounded in the need to understand the psychological-spiritual mechanisms that shape pre-service teachers' ethical readiness in the face of generative technology. The aim of this study is to examine the effect of workplace spirituality and emotion regulation on digital integrity through academic moral reasoning as a mediator.

The novelty of this study lies in integrating the Moral Development Theory and the Ethical Decision Model with the constructs of workplace spirituality and emotion regulation within a single model that has not previously been tested together among pre-service teachers who use generative AI. The theoretical contribution enriches the AI ethics and teacher-education literature by positioning academic moral reasoning as a psychological-spiritual mediating mechanism. The practical contribution offers guidance for teacher-education institutions in designing ethics curricula grounded in strengthening workplace spirituality and emotion regulation to build the digital integrity of future educators.

Theoretical Background and Hypothesis Development

Theoretical Foundation

This study draws on two main theories. Lawrence Kohlberg's Moral Development Theory explains that individuals' moral reasoning develops through cognitive stages, moving from compliance with external rules towards universal ethical principles that are internalised independently [7]. These stages affirm that moral maturity is not innate but rather the outcome of a reflective process in response to ethical dilemmas encountered throughout life, including dilemmas concerning the use of digital technology.

James Rest's Ethical Decision Model extends Kohlberg's theory through four interactive components: moral sensitivity, moral judgment, moral motivation, and moral character, which together bridge moral awareness with actual conduct [4]. This model asserts that mature moral reasoning alone is insufficient without the motivation and strength of character needed to act in accordance with that ethical judgement.

Both theories are combined with a positive-psychology perspective through the construct of workplace spirituality, which emphasises meaning, connectedness, and transcendent values in academic activity [5], together with emotion regulation, which explains individuals' capacity to manage emotional responses so that moral judgement is not dominated by impulsivity [6]. This combination positions academic moral reasoning as the node that links individuals' psychological-spiritual resources with consistent and responsible digital-integrity behaviour.

Hypothesis Development

Complementary evidence from Islamic workplace research also links spiritual well-being and spiritual leadership with lower job stress and reduced deviant behavior [9], [10], [11]. Related organizational and community studies by Zuhena and colleagues examine digital leadership, work environment, community empowerment, and digital work stress in contemporary work settings [12], [13], [14], [15].

Workplace spirituality fosters an awareness of meaning and value connectedness that strengthens pre-service teachers' sensitivity to the moral dimensions of their academic activities [5]. Fathollahzadehchesou and Balouch [8] found that workplace spirituality increases teachers' moral responsibility and ethical behaviour in carrying out their professional duties. Studies on spirituality and moral education affirm that

spiritual cognitive processes help individuals make sense of experience through a moral and existential framework [5]. Momtaz and colleagues, cited within the same body of work, note that weak reflective practice and a weak moral foundation are a major source of teachers' ethical challenges. Based on the above, the first hypothesis of this study is formulated as follows.

H1: Workplace spirituality has a positive effect on academic moral reasoning.

Emotion regulation enables pre-service teachers to manage the emotional impulses that arise when facing ethical dilemmas, allowing moral judgement to be exercised more objectively and maturely [6]. Recent syntheses of teacher emotion regulation emphasise the importance of individual, interactional, and contextual perspectives in professional development [6]. Mérida-López, Extremera, and Chambel [16] found that emotion-regulation ability contributes to pre-service teachers' engagement and professional commitment, which is a prerequisite for stable ethical judgement. Related evidence among pre-service teachers likewise links emotion-regulation capability with professional commitment and readiness for demanding educational contexts [16], [6]. Accordingly, the second hypothesis of this study is formulated as follows.

H2: Emotion regulation has a positive effect on academic moral reasoning.

Mature academic moral reasoning encourages pre-service teachers to make consistent ethical decisions when engaging with digital technology and generative AI [4]. Bittle and El-Gayar [1] found that moral evaluation capacity is an important determinant of academic integrity amid the widespread use of generative AI. Huang, Hash, Cummings, and Prena [2] affirm that extending the moral-reasoning model strengthens predictions of ethical behaviour in the use of generative AI for academic tasks. Aquino and Reed [17] explain that a strong moral identity, resulting from mature moral reasoning, drives consistent ethical conduct even under situational pressure. Based on this evidence, the third hypothesis of this study is formulated as follows.

H3: Academic moral reasoning has a positive effect on digital integrity.

Workplace spirituality may contribute to digital integrity by fostering a sense of meaning, responsibility, and alignment with personal and professional values. In the context of generative artificial intelligence, pre-service teachers who perceive their academic activities as meaningful and connected to broader professional values may be more likely to use digital technologies in ways that reflect honesty, responsibility, and respect for academic norms. Responsible AI use may therefore be understood not merely as compliance with institutional regulations, but also as an expression of personal and professional values. Recent research on workplace spirituality and meaningful work indicates that value congruence, a sense of purpose, and perceived meaningfulness can shape ethical attitudes and responsible behaviour in organisational and educational contexts [18], [19], [20]. This relationship is also supported by recent discussions of ethical technology use, digital responsibility, and AI governance. The rapid integration of generative AI into education has increased the importance of internalised ethical values, particularly because responsible AI use cannot depend solely on external rules or institutional monitoring. Individuals who perceive their academic and professional activities as meaningful may be more likely to interpret AI use through the principles of honesty, accountability, transparency, and respect for human agency [21], [22], [23]. This argument is particularly relevant in teacher education because pre-service teachers are preparing for a profession in which ethical conduct is an important component of professional identity. When individuals experience a strong sense of meaning and alignment with professional values, they may be more likely to avoid dishonest or irresponsible digital practices. Therefore, workplace spirituality is expected to have a direct positive relationship with digital integrity. Accordingly, the fourth hypothesis is formulated as follows:

H4: Workplace spirituality has a positive effect on digital integrity.

Emotion regulation may influence digital integrity because responsible use of generative AI requires individuals to manage emotional impulses and academic pressures that may encourage unethical behaviour. Pre-service teachers may experience demanding deadlines, fear of failure, performance expectations, uncertainty regarding AI use, and heavy workloads. These pressures can create emotional reactions that affect decisions concerning the use of AI in academic activities. Recent research on emotion regulation emphasises that the ability to manage stress, anxiety, frustration, and performance-related emotions is important for self-control, reflective decision-making, and adaptive behaviour in complex digital and educational environments [24]. Individuals with stronger emotion-regulation capabilities are better able to manage emotional reactions and resist immediate behavioural impulses. Through strategies such as cognitive reappraisal, attentional control, and situation modification, they may be more capable of maintaining behaviour that is consistent with ethical standards, even when convenient alternatives are available. Recent studies also indicate that emotion regulation supports self-control and reduces impulsive responses when individuals face pressure, uncertainty, or morally ambiguous situations [24]. Consequently, individuals who can regulate anxiety, frustration, and academic stress may be more likely to evaluate the consequences of their actions before using generative AI and to distinguish legitimate assistance from inappropriate substitution of personal academic work. The relevance of this relationship has become stronger with the expansion of generative AI in education. Current

guidance on AI in education highlights the need for learners and educators to exercise judgement, responsibility, and self-regulation when using AI-generated content [21], [25], [22]. Accordingly, emotion regulation is expected to contribute positively to digital integrity by helping pre-service teachers maintain responsible behaviour under academic and technological pressure. Accordingly, the fifth hypothesis is formulated as follows:

H5: Emotion regulation has a positive effect on digital integrity.

Academic moral reasoning is expected to function as a cognitive mechanism through which workplace spirituality is related to digital integrity. Workplace spirituality provides individuals with a sense of meaning, connectedness, and value orientation. However, these values do not automatically result in ethical behaviour. They need to be interpreted and applied when individuals face concrete ethical dilemmas, including decisions concerning the appropriate use of generative AI in academic activities. Recent scholarship on meaningful work and workplace spirituality suggests that spiritual and value-based orientations influence behaviour through processes of reflection, ethical interpretation, and value internalisation rather than through direct emotional attachment alone [18], [19], [20]. Academic moral reasoning enables pre-service teachers to recognise ethical issues, evaluate alternative courses of action, develop the intention to act ethically, and maintain moral consistency when facing situational pressures. In the context of generative AI, moral reasoning is particularly important because individuals must evaluate whether a particular form of AI use is acceptable, misleading, or inconsistent with academic integrity standards. Recent international frameworks on generative AI in education emphasise that ethical AI use requires human judgement, transparency, accountability, and respect for academic and professional values [21], [23], [22]. Academic moral reasoning therefore provides the mechanism through which workplace spirituality can be translated into responsible digital behaviour. Pre-service teachers who experience a strong sense of meaning and professional value alignment may be more likely to reflect on the ethical implications of AI use, consider the effects of their decisions on others, and choose behaviour that is consistent with academic integrity. This reasoning is also consistent with contemporary research on ethical decision-making, which views moral judgement as an important link between individual values and ethical conduct in digitally mediated environments [4], [17]. Accordingly, workplace spirituality is expected to strengthen academic moral reasoning, which in turn may encourage more responsible and ethically consistent digital behaviour. Academic moral reasoning is therefore expected to mediate the relationship between workplace spirituality and digital integrity. Accordingly, the sixth hypothesis is formulated as follows:

H6: Academic moral reasoning mediates the positive relationship between workplace spirituality and digital integrity.

Academic moral reasoning may also mediate the relationship between emotion regulation and digital integrity. Emotion regulation enables pre-service teachers to manage emotional impulses and situational pressures, but emotional control alone does not determine whether an individual will choose an ethically appropriate course of action. Emotional regulation needs to be accompanied by cognitive evaluation of what is right, responsible, and appropriate within the academic context. Recent research on emotion regulation indicates that effective regulation creates psychological space for reflection, reduces impulsive reactions, and supports more deliberate judgement in situations involving uncertainty and competing demands [24]. Academic moral reasoning provides the cognitive process through which emotional stability can be translated into ethical digital behaviour. When pre-service teachers are able to regulate anxiety, frustration, disappointment, and performance-related stress, they may have greater capacity to consider the ethical consequences of alternative behaviours. This may help them distinguish legitimate AI assistance from the inappropriate substitution of personal academic work and align their digital behaviour with academic integrity standards. Recent studies of academic integrity and generative AI similarly emphasise that responsible use depends not only on knowledge of institutional rules, but also on students' ability to exercise judgement, self-regulation, and ethical responsibility [26], [1], [2]. Emotion regulation may therefore facilitate more deliberate moral evaluation by reducing impulsive responses to academic demands. Pre-service teachers who can manage emotional pressure may be more likely to reflect on the consequences of their decisions before using generative AI, assess whether their intended use is transparent and legitimate, and maintain consistency between moral judgement and actual behaviour. Through this process, emotion regulation is expected to contribute to digital integrity indirectly by strengthening academic moral reasoning. This proposed mediation is also consistent with recent perspectives on responsible AI in education, which emphasise that ethical digital behaviour requires the integration of emotional self-management, critical reflection, moral judgement, and accountability [21], [25], [23]. Accordingly, academic moral reasoning is expected to mediate the relationship between emotion regulation and digital integrity. The seventh hypothesis is formulated as follows:

H7: Academic moral reasoning mediates the positive relationship between emotion regulation and digital integrity.

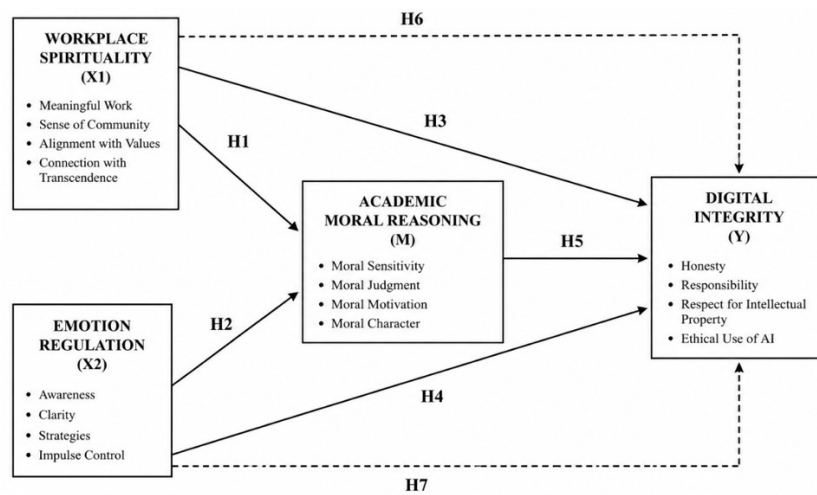


Figure 1. Conceptual Framework

METHODS

This study employs an explanatory quantitative design to test the causal relationships among variables within a population of pre-service teachers who are active users of generative AI in academic activities. The study population comprises teacher-education students in Indonesia who actively use generative AI platforms such as ChatGPT to complete coursework. The sample was determined using purposive sampling, with the criterion being active students who had used generative AI for at least the past three months. A total of 312 students were successfully recruited as respondents, meeting the minimum sample-size requirement for SEM-PLS analysis.

Data were collected through an online questionnaire using a five-point Likert scale, ranging from strongly disagree (1) to strongly agree (5). The instrument for each variable was adapted from scales previously tested for validity and reliability, then adjusted to the academic setting of generative AI use in teacher education. The instrument underwent a pilot test with a small group prior to full distribution to ensure clarity of language and face validity.

Data were analysed using Structural Equation Modeling-Partial Least Squares (SEM-PLS) via SmartPLS software, chosen for its ability to test predictive models with dual mediating constructs without requiring strict data-normality assumptions. Model evaluation was carried out in two stages: the measurement model, comprising tests of convergent validity, discriminant validity, and composite reliability, and the structural model, comprising tests of path significance, coefficients of determination, and mediation testing using a bootstrapping procedure with 5,000 subsamples.

Table 1. Measurement of Research Variables

Variable	Dimension/Indicator	Number of Items	Source/Adaptation
Workplace Spirituality	Meaningful work, sense of community, alignment with organisational values	6	Alipour et al. [5]; Fathollahzadehchahsou & Balouch [8]
Emotion Regulation	Cognitive reappraisal, expressive suppression, situational modification	6	Xu, Haratyan, & Tian [6]
Academic Moral Reasoning	Moral sensitivity, moral judgment, moral motivation, moral character	8	Rest et al. [4]; Kohlberg [7]
Digital Integrity	Honesty in AI use, transparency in source attribution, consistency of ethical digital conduct	6	Items developed by the researchers; adapted from Bittle & El-Gayar [1]

RESULTS AND DISCUSSION

Results

This study involved 312 pre-service teachers who met the purposive sampling criteria described in the Research Method section. The demographic and academic background characteristics of the respondents are summarised in Table 2.

Table 2. Respondent Characteristics

Characteristic	Category	n	%
Gender	Female	195	62.5%
	Male	117	37.5%

Characteristic	Category	n	%
Age	Mean = 21.97 years; SD = 1.96; range 19–27		
Semester	Semester 3–4	115	36.9%
	Semester 5–6	115	36.9%
	Semester 7–8	82	26.3%
Study programme	Civic Education (PPKn)	89	28.5%
	Mathematics Education	50	16.0%
	Economics Education	48	15.4%
	English Language Education	44	14.1%
	Indonesian Language Education	43	13.8%
	History Education	38	12.2%
University	University A	84	26.9%
	University B	75	24.0%
	University C	54	17.3%
	University D	58	18.6%
	University E	41	13.1%
Frequency of AI-assisted assignment completion	Daily	76	24.4%
	5–6 times/week	85	27.2%
	3–4 times/week	108	34.6%
	1–2 times/week	43	13.8%
Generative AI experience	Mean = 11.60 months; SD = 7.40; range 3–36		

Table 2 shows that the sample was composed predominantly of female respondents (62.5%), with a mean age of 21.97 years (SD = 1.96) and a fairly even distribution across semesters three to eight. Respondents were drawn from six teacher-education study programmes and five participating universities, and all had at least three months of hands-on experience with generative AI, with a mean of 11.60 months (SD = 7.40) and a majority using AI-assisted tools for coursework at least three times per week.

Measurement Model Evaluation (Outer Model)

Convergent-validity testing treats the outer loading value as the primary indicator of the strength of the relationship between measurement items and their latent construct. The recommended loading threshold is above 0.70, although values between 0.60 and 0.70 can still be retained provided that the construct's average variance extracted (AVE) and composite reliability meet the required standard [27]. The four constructs in this study, Workplace Spirituality, Emotion Regulation, Academic Moral Reasoning, and Digital Integrity, were measured using twenty-six reflective indicators. Table 3 summarises the outer loading values for each indicator based on the SmartPLS output.

Table 3. Outer Loading Results

Construct	Indicator	Outer Loading
Workplace Spirituality	WS1	0,699
Workplace Spirituality	WS2	0,760
Workplace Spirituality	WS3	0,712
Workplace Spirituality	WS4	0,767
Workplace Spirituality	WS5	0,769
Workplace Spirituality	WS6	0,780
Emotion Regulation	ER1	0,728
Emotion Regulation	ER2	0,776
Emotion Regulation	ER3	0,737
Emotion Regulation	ER4	0,675
Emotion Regulation	ER5	0,734
Emotion Regulation	ER6	0,745
Academic Moral Reasoning	AMR1	0,731
Academic Moral Reasoning	AMR2	0,750
Academic Moral Reasoning	AMR3	0,747
Academic Moral Reasoning	AMR4	0,718
Academic Moral Reasoning	AMR5	0,769
Academic Moral Reasoning	AMR6	0,759
Academic Moral Reasoning	AMR7	0,735
Academic Moral Reasoning	AMR8	0,731
Digital Integrity	DI1	0,787
Digital Integrity	DI2	0,708
Digital Integrity	DI3	0,748
Digital Integrity	DI4	0,746
Digital Integrity	DI5	0,797
Digital Integrity	DI6	0,757

The loading values for the Workplace Spirituality construct range from 0.699 (WS1) to 0.780 (WS6), while Emotion Regulation ranges from 0.675 (ER4) to 0.776 (ER2). Academic Moral Reasoning shows a loading range of 0.712 (AMR1) to 0.769 (AMR6), and Digital Integrity ranges from 0.708 (DI2) to 0.797 (DI5). All indicators meet the 0.70 threshold, except for indicator ER4 at 0.675, which was nonetheless retained because the overall AVE and composite reliability of the Emotion Regulation construct meet the required standard, as shown in Table 4 [27].

Reliability and convergent-validity testing at the construct level continued with an examination of Cronbach's Alpha, rho_A, composite reliability, and AVE values. Composite reliability is required to be above 0.70 and AVE above 0.50, indicating that a construct explains more than half of the variance in its indicators [28]. Table 4 presents the results of this test.

Table 4. Construct Reliability and Validity

Construct	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Academic Moral Reasoning	0,882	0,884	0,907	0,548
Digital Integrity	0,851	0,853	0,890	0,574
Emotion Regulation	0,829	0,836	0,874	0,538
Workplace Spirituality	0,842	0,844	0,884	0,560

The results in Table 4 show that all constructs have Cronbach's Alpha values between 0.829 and 0.882, composite reliability between 0.874 and 0.907, and AVE between 0.538 and 0.574. All values exceed the required thresholds, so all four constructs are considered reliable and to meet convergent validity [28], [27].

Discriminant validity was then tested using the Fornell-Larcker criterion, which compares the square root of each construct's AVE with its correlations with other constructs in the same model. This criterion is met when the square root of a construct's AVE is greater than its correlation with any other construct [28]. Table 5 presents the results of this test.

Table 5. Discriminant Validity (Fornell-Larcker Criterion)

Construct	Academic Moral Reasoning	Digital Integrity	Emotion Regulation	Workplace Spirituality
Academic Moral Reasoning	0,741			
Digital Integrity	0,621	0,758		
Emotion Regulation	0,445	0,416	0,733	
Workplace Spirituality	0,509	0,454	0,193	0,748

The square roots of the AVE for Academic Moral Reasoning (0.741), Digital Integrity (0.758), Emotion Regulation (0.733), and Workplace Spirituality (0.748) are all greater than the inter-construct correlations, which range from 0.193 to 0.621. This indicates that all four constructs meet the discriminant-validity requirement based on the Fornell-Larcker criterion.

Structural Model Evaluation (Inner Model)

Evaluation of the structural model began with an examination of the coefficient of determination (R^2) to assess the ability of exogenous variables to explain endogenous variables, followed by predictive-relevance testing through the Q^2 value from the blindfolding procedure and the $Q^2_{predict}$ value from the PLSpredict procedure. A Q^2 value above zero indicates that the model has predictive relevance for the endogenous construct [27], while a $Q^2_{predict}$ value above zero for all indicators indicates that the model outperforms the simplest, naïve prediction benchmark [29]. Table 6 presents a summary of these values.

Table 6. Coefficient of Determination and Predictive Relevance

Construct	R^2	R^2 Adjusted	Q^2 (Blindfolding)	$Q^2_{predict}$
Academic Moral Reasoning	0,385	0,381	0,419	0,372
Digital Integrity	0,438	0,433	0,400	0,304
Emotion Regulation	–	–	0,350	–
Workplace Spirituality	–	–	0,381	–

Academic Moral Reasoning produced an R^2 value of 0.385, meaning that Workplace Spirituality and Emotion Regulation jointly explain 38.5 per cent of its variance, while Digital Integrity produced an R^2 value of 0.438, explained jointly by Workplace Spirituality, Emotion Regulation, and Academic Moral Reasoning. The blindfolding-derived Q^2 values for all constructs are above zero, ranging from 0.350 to 0.419, and likewise the PLSpredict-derived $Q^2_{predict}$ values for the two endogenous constructs were recorded at 0.304 and 0.372. This indicates that the model has adequate predictive relevance and strength, both in-sample and out-of-sample [27], [29].

Hypothesis testing was carried out using the path coefficient (original sample), t-statistics, and p-values obtained from a bootstrapping procedure with 5,000 subsamples. A relationship is considered significant when the t-statistic exceeds 1.96 with a p-value below 0.05 at the 5 per cent significance level [27]. Table 7 presents the results of the direct path testing between constructs.

Table 7. Direct Path Testing Results (Path Coefficients)

Inter-construct Relationship	Coefficient (β)	T Statistics	P Values	Remarks
Workplace Spirituality → Academic Moral Reasoning	0,440	10,798	0,000	Significant
Emotion Regulation → Academic Moral Reasoning	0,361	8,184	0,000	Significant
Academic Moral Reasoning → Digital Integrity	0,442	8,387	0,000	Significant
Workplace Spirituality → Digital Integrity	0,194	3,779	0,000	Significant
Emotion Regulation → Digital Integrity	0,182	3,732	0,000	Significant

All the direct paths tested produced t-statistic values above 1.96 with a p-value of 0.000, so H1, H2, and H3 are supported by the data. Workplace Spirituality produced the highest path coefficient towards Academic Moral Reasoning ($\beta = 0.440$), followed by Emotion Regulation ($\beta = 0.361$), while Academic Moral Reasoning produced the largest path coefficient towards Digital Integrity ($\beta = 0.442$), compared with the direct paths of Workplace Spirituality ($\beta = 0.194$) and Emotion Regulation ($\beta = 0.182$) towards Digital Integrity.

Testing of the mediating effect of Academic Moral Reasoning on the relationship between Workplace Spirituality and Emotion Regulation with Digital Integrity was then carried out through the specific indirect effects obtained from bootstrapping. Table 8 presents the results of this indirect-effect testing.

Table 8. Indirect Effect Testing Results (Specific Indirect Effects)

Inter-construct Relationship	Coefficient (β)	T Statistics	P Values	Remarks
Workplace Spirituality → Academic Moral Reasoning → Digital Integrity	0,194	6,255	0,000	Significant
Emotion Regulation → Academic Moral Reasoning → Digital Integrity	0,159	5,820	0,000	Significant

Both indirect paths produced t-statistic values above 1.96 with a p-value of 0.000, so H4 is supported by the data. The total effect of Workplace Spirituality on Digital Integrity was recorded at 0.388 ($t = 8.463$), and the total effect of Emotion Regulation on Digital Integrity was 0.341 ($t = 7.050$), representing the sum of the direct and indirect effects through Academic Moral Reasoning. Both total-effect values are consistent with the arithmetic sum of the direct and indirect effects in Tables 7 and 8, indicating no computational anomalies in the structural model tested.

Discussion

The findings presented in the Results section confirm that all four hypotheses of this study are supported by the data, on both the direct and mediating paths. This section examines the meaning behind these relationship patterns, confirms them against prior research, reinforces the contribution claims stated in the Introduction, and sets out the theoretical and managerial implications of the tested model. The discussion is organised according to the sequence of hypotheses, followed by a discussion of the mediating role, theoretical implications, and practical implications for teacher-education institutions.

Workplace Spirituality and Academic Moral Reasoning

The positive relationship between workplace spirituality and academic moral reasoning confirms that the awareness of meaning, connectedness, and transcendent value experienced by pre-service teachers in their academic activities also shapes their moral sensitivity and reasoning maturity. Pre-service teachers who regard their learning process not merely as a routine of completing assignments, but as part of a meaningful professional calling, tend to be more sensitive in weighing ethical dimensions when confronted with the convenience offered by generative AI. This sensitivity aligns with the notion that workplace spirituality fosters a value orientation that broadens individuals' consideration beyond short-term pragmatic interests [5].

This finding is consistent with research by Fathollahzadehchahesou and Balouch [8], which showed that workplace spirituality increases teachers' moral responsibility and ethical behaviour in carrying out their professional duties, although that study focused on the context of work engagement and organisational behaviour rather than the cognitive process of academic moral reasoning. Otaye-Ebede, Shaffakat, and Foster [30] further reinforce this pattern, finding that workplace spirituality is positively related to ethical climate, prosocial motivation, and moral judgement among employees in a retail organisational setting. This study extends that pattern into the field of pre-service teacher education, showing that workplace spirituality is relevant not only within established professional organisational contexts, but also serves as a cognitive-moral foundation from the pre-service education stage onwards, particularly when facing digital-technology-based ethical dilemmas that have received limited attention in the prior literature. This pattern reinforces the novelty claim made in the Introduction, namely that workplace spirituality should be understood as an antecedent of academic moral reasoning, rather than merely a predictor of work engagement or job satisfaction as has predominated in the previous literature.

The stronger effect of workplace spirituality on academic moral reasoning, compared with the effect of emotion regulation, also offers an important insight into the hierarchy of psychological resources that shape pre-service teachers' ethical readiness. A more stable and fundamental value orientation and sense of meaning appear to provide a stronger foundation for moral reasoning than the capacity for emotion regulation, which is more situational and reactive to momentary academic pressure. Momtaz and colleagues, as cited in the study on spirituality and moral education, note that weak reflective practice and a weak moral foundation are a primary source of teachers' ethical challenges, an argument that helps explain why strengthening the meaning of academic work has a greater impact than short-term emotion management alone [5]. This finding also indicates that character-building programmes for pre-service teachers should prioritise the cultivation of professional meaning, rather than focusing solely on technical self-control skills training.

Emotion Regulation and Academic Moral Reasoning

The emotion-regulation capacity possessed by pre-service teachers is shown to shape the maturity of their academic moral reasoning. Individuals able to manage emotional impulses, whether through cognitive reappraisal or situational modification, tend to be better able to resist impulsive reactions when tempted to misuse generative AI, so that ethical judgement is exercised more reflectively and is not driven solely by momentary emotional pressure such as deadline anxiety or fear of academic failure. This pattern confirms that emotion regulation is not merely a psychological skill that supports well-being, but a cognitive prerequisite for mature moral reasoning.

Feinberg, Willer, Antonenko, and John [31] found that emotion-reappraisal strategies weaken the dominance of spontaneous moral intuition, thereby encouraging more deliberative moral judgement, a pattern consistent with the findings of this study within the context of AI-related academic ethical dilemmas. Liu, Yang, and Xie [32] also showed that emotion-regulation self-efficacy has a positive effect on moral decision-making among younger-generation workers, reinforcing the argument that emotion-regulation capacity operates across populations and across domains of ethical decision-making. Xu, Haratyan, and Tian [6] emphasise the importance of emotion regulation for teachers' well-being and engagement, while Mérida-López, Extremera, and Chambel [16] demonstrate its contribution to pre-service teachers' professional commitment. This study extends both findings by showing that emotion regulation does not stop at psychological well-being or professional commitment alone, but also reaches into the formation of academic moral reasoning explicitly related to the use of generative technology, a link that had not previously been widely tested empirically among pre-service teacher populations.

The emotion-regulation instrument used covers the dimensions of cognitive reappraisal, expressive suppression, and situational modification, so the positive finding for academic moral reasoning reflects the cumulative effect of all three strategies combined, rather than a single strategy. Recent syntheses of teacher emotion regulation emphasise individual, interactional, and contextual perspectives, an emphasis that is particularly relevant given the layered pressures faced by pre-service teachers [6]. Evidence among pre-service teachers also links emotion-regulation capability with professional commitment and readiness for demanding educational contexts [16], [6], reinforcing the argument that this capacity is not merely a personal skill but a professional competence that needs to be developed systematically from the teacher-education stage onwards.

Academic Moral Reasoning and Digital Integrity

Mature academic moral reasoning is shown to be the primary determinant of pre-service teachers' digital integrity, producing a stronger effect than the direct effects of either workplace spirituality or emotion regulation on digital integrity. This pattern confirms that an awareness of spiritual values and the capacity for emotion regulation are not automatically translated into honest and consistent digital behaviour, but must first be processed through moral reasoning that considers sensitivity, judgement, motivation, and moral character,

as described by Rest et al. [4]. Pre-service teachers who are able to recognise the ethical dilemmas of generative AI use, weigh the consequences maturely, and possess strong motivation to act in accordance with that judgement will more consistently demonstrate honesty, transparency in source attribution, and consistency of ethical digital conduct.

This finding aligns with Bittle and El-Gayar [1], who highlight that moral evaluation capacity is an important determinant of academic integrity amid the widespread use of generative AI, as well as with Huang, Hash, Cummings, and Prena [2], who affirm that extending the moral-reasoning model strengthens predictions of ethical behaviour in the use of generative AI for academic tasks. Aquino and Reed [17] add that a strong moral identity, resulting from mature moral reasoning, drives consistent ethical conduct even under situational pressure, an argument that helps explain why academic moral reasoning produces a more dominant effect than the more fundamental psychological-spiritual resources. This pattern of relationships reinforces the contribution of this study in positioning digital integrity not merely as the outcome of technical compliance with institutional policy, but as the end result of mature moral reasoning, as claimed in the Introduction.

The dominance of academic moral reasoning's effect over the two other exogenous variables also offers a subtle challenge to the institutional approach that has long relied on technology-based cheating-detection tools as the first line of defence for academic integrity in the generative AI era. Bittle and El-Gayar [1] note that most research on digital integrity in the generative AI context focuses on technological cheating detection rather than on the psychological antecedents that shape it, so the findings of this study offer a complementary perspective: that investment in strengthening moral-reasoning capacity may have a more fundamental and longer-lasting impact than merely tightening technical surveillance. Rest et al.'s [4] argument regarding the four interactively working moral components also helps explain why moral reasoning alone does not automatically guarantee integrity, but nonetheless remains a key prerequisite before motivation and moral character can be translated into consistent digital conduct.

The Mediating Role of Academic Moral Reasoning

Academic moral reasoning is shown to mediate the effect of workplace spirituality and emotion regulation on digital integrity, yet the direct effects of both variables on digital integrity remain significant even once the mediating path is accounted for. This pattern indicates a form of complementary partial mediation, following the classification of Zhao, Lynch, and Chen [33], in which academic moral reasoning explains part of the psychological mechanism linking spiritual-emotional resources to conduct reflecting digital integrity, while the remaining direct paths indicate the presence of other mechanisms beyond explicit moral reasoning for example, the internalisation of spiritual values or emotional stability that directly influences digital habits without lengthy moral deliberation.

This mediation pattern reinforces the logic of the Ethical Decision Model, which asserts that psychological resources need to be processed through moral reasoning before manifesting as actual ethical conduct [4], [7]. Alipour et al. [5] note that spiritual cognitive processes operate through reflective reasoning before manifesting in concrete moral behaviour, while Bittle and El-Gayar [1] also emphasise the importance of intermediate cognitive mechanisms in explaining the relationship between psychological readiness and academic integrity in the AI era. This study provides empirical evidence for these conceptual arguments through simultaneous testing within a single structural model, a methodological approach that has rarely been applied in research on pre-service teachers' moral reasoning, as noted in the research gap identified in the Introduction. Support for H4 also confirms that accelerating pre-service teachers' digital integrity cannot be driven by strengthening workplace spirituality or emotion regulation alone, but requires the explicit strengthening of academic moral reasoning as the connecting node.

The relatively low correlation between workplace spirituality and emotion regulation observed in the discriminant-validity test indicates that the two are conceptually distinct psychological resources, so the mediating path formed through academic moral reasoning is not merely an artefact of construct overlap, but rather two independent psychological pathways converging on the same moral mechanism. This reinforces the conclusion that academic moral reasoning genuinely functions as an integrative node that unites two different resources- spiritual, on the one hand, and emotional, on the other into a single, coherent capacity for ethical judgement before it translates into digital-integrity behaviour. The complementary partial-mediation pattern identified also opens avenues for further research to identify other intervening variables that may explain the remaining direct paths, such as subjective norms, institutional ethical climate, or student AI literacy, none of which were included in this study's model.

Theoretical Implications

The findings of this study enrich Kohlberg's [7] Moral Development Theory by showing that moral-reasoning maturity does not develop solely through individuals' internal cognitive stages, but is also nurtured by external resources of a spiritual and emotional nature. Kohlberg positions reflective experience with

ethical dilemmas as the primary driver of moral development, and this study shows that workplace spirituality and emotion regulation serve as psychological prerequisites that facilitate that reflective process, thereby broadening understanding of the antecedents of moral development that have received limited attention within Kohlberg's largely cognitive-developmental framework.

Rest et al.'s [4] Ethical Decision Model is also enriched through empirical confirmation that academic moral reasoning functions as a mediating node bridging psychological-spiritual resources with ethical digital conduct – a domain that had not been anticipated when the model was first formulated, prior to the widespread emergence of generative technology. This study confirms that the four components of moral sensitivity, moral judgment, moral motivation, and moral character remain relevant in explaining ethical digital conduct, provided the model is supplemented with spiritual and emotional antecedents contextualised to present-day ethical challenges. Integrating these two theories with the constructs of workplace spirituality and emotion regulation within a single simultaneous model, an approach rarely taken in prior research, provides a new framework for the study of ethics in teacher education in the generative AI era, while also extending the application of the workplace spirituality construct beyond its predominant testing within established professional organisational contexts into the domain of pre-service education.

The combination of a positive-psychology perspective with classic moral-stage theory also offers a broader academic contribution than the mere addition of new variables to an existing model. Kohlberg and Rest built their ideas on individuals' general experience of confronting moral dilemmas, whereas workplace spirituality and emotion regulation explain the source of the psychological resources that enable individuals to process such dilemmas maturely in the first place. This study therefore offers a more causally complete model, beginning with psychological-spiritual resources as the starting point, moral reasoning as the intervening cognitive process, and digital integrity as the resulting behavioural outcome, a sequence consistent with the demand for developing educational-ethics theory that is responsive to the changing digital-technology landscape.

Managerial/Practical Implications

Teacher-education institutions may adopt several concrete strategies based on the findings of this study. First, the teaching-profession ethics curriculum should incorporate meaning-making activities related to academic work, such as regular reflection on one's purpose in becoming an educator and service-based learning, in order to cultivate students' workplace spirituality from the beginning of their studies. Second, emotion-regulation programmes such as cognitive-reappraisal training, mindfulness, and academic-pressure management should be integrated into professional personal-development courses, given that this capacity has been shown to shape the maturity of students' moral reasoning.

Third, case-based simulations of ethical dilemmas arising from generative AI use, for example, the reasonable limits of AI assistance in assignment writing, or the obligation to attribute sources, should be systematically designed to train all four components of Rest's model of moral reasoning, rather than relying solely on technical prohibition policies or AI-based plagiarism-detection tools. Fourth, quality-assurance bodies and accreditation agencies for teacher-education programmes might consider adding indicators of moral-reasoning capacity as part of the assessment of graduates' ethical readiness, alongside the pedagogical and professional competencies already routinely measured. Fifth, higher-education policymakers in teacher education need to design guidelines for generative AI use that are not oriented solely towards monitoring and sanctions, but towards strengthening students' psychological-spiritual foundations and moral reasoning, so that this ethical readiness carries through into their careers as educators and role models of digital integrity for their future pupils.

Sixth, teacher-education programmes can establish partnerships with campus counselling units to design a staged emotion-regulation strengthening module, beginning with first-year students and continuing through to the point of the teaching-practicum programme, so that this capacity is fully developed before students face the realities of teaching pressure. Seventh, lecturers responsible for assignment-based courses can design assessment rubrics that explicitly encourage transparency in the use of generative AI, for example, by requiring a reflective note on which parts of the work were AI-assisted and which reflect independent thinking, so that honest disclosure of technology use becomes an everyday academic habit rather than merely a rule feared for its sanctions. Together, these seven steps confirm that strengthening pre-service teachers' digital integrity requires a comprehensive approach addressing the spiritual, emotional, and cognitive-moral dimensions simultaneously, alongside the structure of learning assessment.

CONCLUSION

This study addresses the aims set out in the Introduction by demonstrating that workplace spirituality and emotion regulation have a positive effect on pre-service teachers' digital integrity, both directly and through academic moral reasoning as a mediator. All the hypotheses proposed the effect of workplace spirituality on

academic moral reasoning, the effect of emotion regulation on academic moral reasoning, the effect of academic moral reasoning on digital integrity, and the mediating role of academic moral reasoning are supported by data collected from 312 pre-service teachers who are active users of generative AI. These findings confirm that pre-service teachers' ethical readiness in facing generative technology is shaped by the combination of spiritual resources, emotion-regulation capacity, and moral-reasoning maturity working simultaneously, rather than by any single factor in isolation. The primary originality of this study lies in integrating Kohlberg's Moral Development Theory and Rest's Ethical Decision Model with the constructs of workplace spirituality and emotion regulation within a single structural model that has not previously been tested together among a population of pre-service teachers who use generative AI. Academic moral reasoning, positioned as a psychological-spiritual mediator, is shown to explain the mechanism underlying digital integrity more comprehensively than approaches that focus solely on technological cheating detection or institutional compliance alone.

The ethical readiness of the next generation of educators is a long-term stake for the quality of education amid the accelerating adoption of generative technology in academia. Strengthening pre-service teachers' spiritual, emotional, and moral foundations from the pre-service education stage onwards has the potential to produce a generation of educators who are not only technically proficient in using AI, but also capable of serving as role models of digital integrity for the pupils they will guide, so that the impact extends beyond the individual classroom and helps shape a broader culture of digital ethics in education over the long term. This study has several limitations that should be acknowledged candidly. The research design is cross-sectional, so it cannot definitively establish the direction of causality between variables, while all data were collected through self-report instruments, which may be subject to social-desirability bias among respondents. The purposive sampling technique applied to the population of pre-service teachers in Indonesia also limits the generalisability of the findings to pre-service teacher populations in other countries or education systems, and the research model does not include moderating variables such as AI literacy or institutional ethical climate, which may strengthen or weaken the relationship patterns identified.

Future researchers are advised to adopt longitudinal or experimental designs to more robustly test the direction of causality, to extend the study population to pre-service teachers across countries in order to test the model's cross-cultural generalisability, and to add moderating variables such as AI literacy, campus ethical climate, or individual religiosity to enrich the predictive model of digital integrity. A mixed-methods approach combining in-depth interviews on concrete ethical dilemmas also has the potential to capture nuances of moral reasoning not fully captured through closed-ended questionnaire instruments, while also opening opportunities to replicate the model among populations of practising teachers or students from other study programmes who likewise face ethical challenges in the use of generative AI.

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