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Integrating generative AI into academic practice: The roles of self-efficacy, literacy, and innovation capability in enhancing academic professionalism and well-being among university staff

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ABSTRACT

The rapid integration of generative artificial intelligence (AI) into higher education has transformed academic practices, creating both opportunities and challenges for faculty professionalism and well-being. Guided by Social Cognitive Theory and the Job Demands–Resources model, this study investigates how generative AI self-efficacy, AI literacy, and AI innovation capability influence academic professionalism, and how professionalism, in turn, affects faculty well-being, with leadership support as a moderating factor. Using a mixed-methods approach, data were collected from 384 university faculty members through structured surveys and semi-structured interviews (10 respondents). The quantitative analysis, conducted via PLS-SEM, revealed that all three AI-related capabilities significantly and positively predict academic professionalism, which in turn has a significant effect on well-being. Leadership support was found to significantly enhance this relationship. Qualitative findings further demonstrated that AI serves as both a resource for reducing workload and a source of anxiety, depending on institutional support and ethical awareness. The integration of both methods highlights the dual role of AI as a personal and contextual factor influencing professional identity formation. This study contributes to a deeper understanding of academic professionalism in the digital age. The study also highlights the importance of institutional leadership in ensuring responsible and sustainable integration of artificial intelligence into higher education.

Contribution/Originality: This study contributes to the literature by exploring how generative self-efficacy, literacy, and innovation ability influence academic professionalism and well-being. It offers new insights into the psychological and contextual mechanisms of GAI integration and enhances understanding of responsible GAI adoption in higher education settings.

1. INTRODUCTION

Recently, generative artificial intelligence (GAI), such as ChatGPT, Claude, and DeepSeek, has transformed higher education. These tools enable educators and researchers to automate routine tasks, improve academic writing, and support instructional design (Liu, Zhang, & Wei, 2025; Shahzad, Xu, & Zahid, 2025). As GAI continues to reshape academic work, scholars are questioning how individuals can use these technologies ethically and professionally, and promote their well-being (Huang, Wang, & Zhang, 2024). While the utility of GAI has been widely recognized, its integration into professional academic practice remains uneven and complex. While the existing literature largely

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focuses on adoption intentions or technical training, e.g., (Shi, Liu, & Hu, 2025; Wang, Cui, & Yuan, 2025), few studies have explored how GAI impacts academic professionalism. Furthermore, the psychological consequences of GAI integration, particularly its impact on well-being, have been underexplored (Sarzhanova & Nurgabdeshov, 2025). To understand this evolving landscape, researchers are increasingly focusing on variables such as AI self-efficacy, AI literacy, and AI innovation capabilities, which reflect an individual's competence, confidence, and creative adaptability when using GAI tools (Ji et al., 2025; Ouyang & Ayinde, 2024). These individual-level capabilities are believed to shape how scholars approach their work and how they employ GAI in ways that align with professional norms. However, the pathways through which these capabilities translate into professional behavior and well-being remain underexplored, particularly in non-STEM disciplines and non-Western contexts.

This study builds on two theoretical foundations to address these gaps. First, Social Cognitive Theory (Bandura, 1977), emphasizes that individuals' beliefs in their capabilities, such as self-efficacy and perceived competence, shape their motivation, behavior, and affective outcomes. Applying this framework, we posit that GAI-related competencies are cognitive and motivational resources that enhance professional academic behavior (i.e., academic professionalism), fostering well-being through greater self-realization and engagement. Second, we integrate the Job Demands–Resources (JD–R) Model, which conceptualizes individual skills as "personal resources" that buffer stress and enhance work engagement, and recognizes leadership support as a "job resource" that amplifies positive behavioral outcomes (Ul Haq, Asim, Suki, Zakaria, & Hussain, 2025). Leadership encouraging responsible GAI integration can create psychologically safe environments, reinforcing the link between professionalism and well-being. Despite this theoretical potential, there remains a lack of empirical research combining these two perspectives in the context of GAI in higher education. Furthermore, prior work tends to rely heavily on quantitative survey methods, which may obscure individuals' rich, subjective interpretations regarding GAI, professionalism, and well-being (Huang et al., 2024).

This study used a sequential explanatory mixed methods design to address these gaps. In the quantitative phase, we test a conceptual model linking GAI self-efficacy, AI literacy, and AI innovation capability to academic professionalism and well-being, with leadership support moderating the professionalism and well-being relationship. Partial Least Squares Structural Equation Modelling (PLS-SEM) estimates path relationships and tests theoretical hypotheses. In the qualitative phase, we conduct semi-structured interviews to explore these constructs' underlying mechanisms and subjective experiences, without emphasising ability differences. This approach allows for deeper insight into how academics interpret and enact professionalism and well-being in the context of AI-supported academic work.

This research makes three key contributions by integrating SCT and the JD–R model within a mixed methods study. First, it develops and empirically tests a theory-driven model linking GAI-related competencies to behavioral and psychological outcomes. Second, it introduces the construct of academic professionalism as a key mediator in the AI and well-being pathway, which is an area rarely addressed in prior work. Third, it enhances our understanding of how leadership support shapes professional and emotional outcomes in GAI-integrated academic environments.

2. THEORETICAL FOUNDATION AND HYPOTHESES DEVELOPMENT

2.1. Generative AI Self-Efficacy and Academic Professionalism

Generative AI self-efficacy is defined as an individual's belief in their capability to effectively use AI tools such as ChatGPT, Claude, or other large language models for academic and professional tasks. Self-efficacy, derived from SCT (Bandura, 1977), is a personal resource that influences behavior, motivation, and emotional responses. In other words, when individuals use GAI, higher self-efficacy may encourage them to engage with AI technology in ways that are both productive and consistent with professional norms.

Recent research has explored how GAI self-efficacy influences professional and behavioral outcomes. For example, Mah and Groß (2024) found that higher levels of GAI-related self-efficacy among teachers were positively

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correlated with deeper professional development engagement and innovation in teaching practices. Similarly, Lu, Zheng, Gong, and Xu (2024) demonstrated that training in GAI enhanced pre-service teachers' self-efficacy and higher-order thinking skills, both of which are key elements of responsible academic practice. Nazim and Alzubi (2025) further confirmed a direct link between self-efficacy and professional identity construction. Finally, Ramos and Peeples (2025) found that teachers with higher GAI self-efficacy exhibited higher adoption rates. Therefore, we propose:

H_1: Generative AI self-efficacy positively influences academic professionalism.

2.2. Generative AI Literacy and Academic Professionalism

In this study, GAI literacy refers to an individual's ability to critically understand, evaluate, and responsibly apply GAI tools in a variety of professional and academic contexts (Francis, Jones, & Smith, 2025). Based on SCT, those with high GAI literacy are more likely to understand appropriate academic applications of GAI, regulate their behavior according to institutional expectations, and act with integrity. In this light, literacy enables "moral agency" using advanced technologies, reinforcing professional standards. Chan and Colloton (2024) argue that faculty GAI literacy empowers educators to make pedagogically sound and ethically aligned decisions when using GAI in curriculum design and academic writing. In parallel, the JD–R Model considers GAI literacy a "personal resource" that helps individuals cope with evolving professional demands. For instance, Gallent-Torres, Zapata-González, and Ortego-Hernando (2023) found that GAI-literate lecturers demonstrated greater alignment with institutional policies on academic integrity, even under high workload and technological change. Similarly, Haroud and Saqri (2025) revealed that GAI literacy positively predicted self-reported professionalism among instructors and students, particularly in ambiguous or low-guidance academic environments.

Scholars emphasise that GAI literacy prevents misconduct and fosters a proactive professional identity. Jin, Yan, Echeverria, Gašević, and Martinez-Maldonado (2025) highlight that institutional training and digital literacy policies have improved staff's professionalism and responsibility in applying GAI to research and teaching. Weimann-Sandig (2025) further notes that GAI-literate faculty are more confident in navigating ethical dilemmas and aligning innovation with professional norms. Thus, GAI literacy emerges as a skill and a foundation for ethically engaged and context-aware professionalism. Based on these theoretical and empirical insights, we posit:

H_2: Generative AI literacy positively influences academic professionalism.

2.3. Generative AI Innovation Capability and Academic Professionalism

Generative AI innovation capability refers to an individual's perceived or demonstrated ability to creatively leverage GAI technologies for novel academic purposes (Pang & Wei, 2025). Unlike basic literacy or tool use, innovation capability reflects the capacity to transform AI tools into new solutions, processes, or intellectual contributions within a professional academic context (Burneo-Arteaga, Lira, Murzi, Balula, & Costa, 2025).

Social Cognitive Theory emphasizes human agency and innovation as expressions of self-regulation and goal-directed behavior. Individuals with strong innovation capability actively shape their professional environments by applying technology efficiently, creatively, and ethically. As Francis et al. (2025) argue, innovation in GAI use must be balanced with academic integrity, suggesting that those who innovate responsibly also internalize professional norms. According to the JD-R Model, innovation capability constitutes a high-value personal resource that enhances individuals' ability to cope with rapidly evolving technological demands in academia. It enables staff and faculty to remain professionally relevant while upholding institutional standards.

Furthermore, Weimann-Sandig (2025) noted that GAI innovations are reshaping professional roles in higher education, requiring technical knowledge, ethical sensitivity, and identity reconstruction. Jin et al. (2025) also found that institutions promoting GAI innovation reported greater professional autonomy and rule compliance among their

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employees. Meanwhile, Dai, Liu, and Lim (2023) argued that innovations in GAI can enhance learners' and educators' ability to customize academic tools, thereby improving self-directed professionalism. Therefore, this study proposes:

H_3: Generative AI innovation capability positively influences academic professionalism.

2.4. Academic Professionalism and Well-Being

Academic professionalism refers to the practice of ethical standards, role integrity, and responsible behavior within an academic setting. According to SCT, professionalism is a manifestation of moral agency and self-regulation. Individuals who internalize professional standards are better able to manage pressure, align their behavior with institutional values, and maintain a coherent academic identity. Si (2024) noted that despite pressure for reform, Chinese teachers who act professionally report greater role clarity and personal satisfaction. The JD-R model further elucidates this connection, positioning professionalism as a motivational resource. For example, Garip and Kablan (2024) found that Turkish teachers with a strong sense of professional self-perception exhibited greater emotional resilience and coping skills. Similarly, Thurston and Hammer (2022) identified professionalism as a "missing but crucial" predictor of teachers' ongoing well-being, particularly in teaching environments impacted by rapid technological change.

Furthermore, Yue and Myeong (2025) argued that there was a positive relationship between perceived professionalism and subjective well-being among pre-service teachers. Meanwhile, Wilson, Díaz III, and Brown (2025) documented that student affairs professionals who reconstructed their conceptions of professionalism to include self-care and boundary-setting reported significantly higher well-being scores. These findings suggest that when professionalism is not externally imposed but internally motivated and ethically framed, it can enhance satisfaction, reduce burnout, and promote sustainable academic engagement. Hence, this study proposes that academic professionalism can positively influence staff well-being and proposes the following hypotheses:

H_4: Academic professionalism positively influences teachers' well-being.

2.5. Moderating Role of Leadership Support

Leadership support refers to the degree to which academic staff perceive their leaders as empowering, ethical, and attentive to their professional needs and well-being (Bobbio, Bellan, & Manganelli, 2012). It encompasses behaviors such as recognizing faculty contributions, providing emotional and instrumental resources, and modeling ethical professional norms. The JD–R Model positions leadership support as a contextual resource that moderates the relationship between personal strengths (e.g., professionalism) and psychological outcomes (e.g., well-being). Samad, Muchiri, and Shahid (2022) believed that transformational leadership in universities can alleviate burnout and improve employee well-being. Hammoudi, Soltani, Dalli, Alsarraj, and Malki (2023) also pointed out that emphasizing guidance, recognition, and fair workload distribution by academic leaders has a significant impact on faculty mental health and engagement.

Meanwhile, Jia et al. (2022) demonstrated that ethical leadership can directly enhance well-being. Similarly, Chami-Malaeb, Menhem, and Abdulkhalek (2024) found that higher education leadership mitigated the negative impact of work stress on well-being and enhanced the positive effect of professional responsibility. In addition, Ilyas, Abid, and Ashfaq (2023) observed that perceived organizational support can reduce burnout and enhance the impact of professionalism on engagement and well-being. Leadership style and institutional trust have been shown to be important moderators of faculty job satisfaction and psychological resilience (Siburian, 2025). Therefore, we propose:

H_5: Leadership support moderates the relationship between academic professionalism and well-being, such that the relationship is stronger under higher leadership support.

Figure 1 presents the research framework of the study proposes that generative AI self-efficacy, literacy, and innovation capability each positively influence academic professionalism. Academic professionalism, in turn, is

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expected to enhance well-being. The framework also assumes that leadership support moderates the link between academic professionalism and well-being, strengthening this positive relationship.

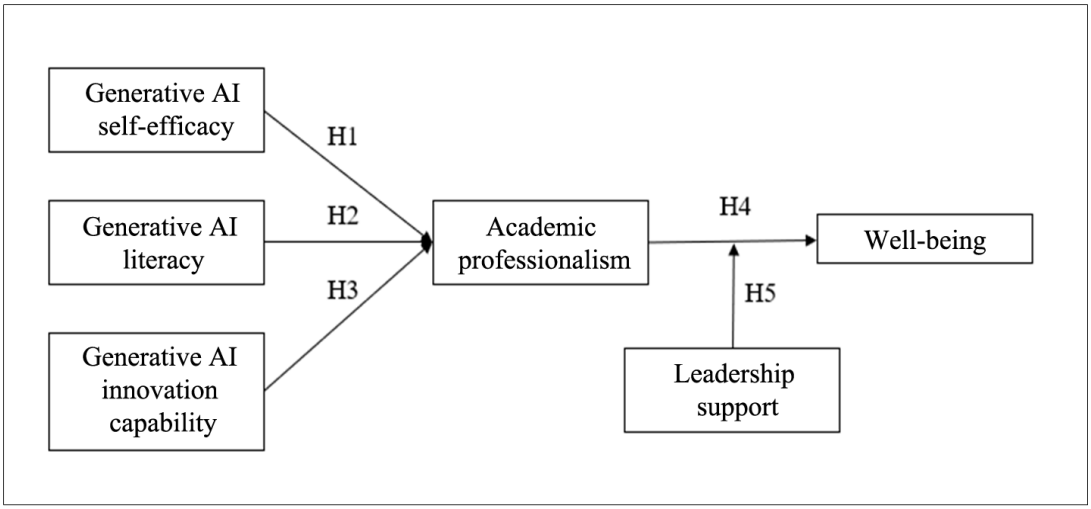

Figure 1. Research framework of the study.

3. METHODOLOGY

3.1. Research Design

This study adopts an explanatory sequential mixed methods design, combining quantitative PLS-SEM and qualitative semi-structured interviews to comprehensively investigate how GAI-related capabilities influence academic professionalism and well-being, and how leadership support moderates this relationship. First, using survey-based data from higher education professionals, this phase applies PLS-SEM to assess the hypothesized relationships. Second, structured interviews are conducted with a purposive sample of participants to gain an in-depth understanding of how individuals experience and make sense of GAI use, professionalism, leadership support, and well-being in academic contexts.

3.2. Quantitative Phase: PLS-SEM

3.2.1. Sample and Data Collection

The quantitative phase employed survey design using self-administered questionnaires (5-point Likert scale) to capture participants' perceptions of GAI self-efficacy, literacy, innovation capability, academic professionalism, well-being, and perceived leadership support. A purposive sampling strategy was adopted to ensure participants had direct exposure to GAI tools (e.g., ChatGPT, DeepSeek). This study collected 384 valid responses, which exceeds the minimum criteria for robust path analysis (Hair, Sarstedt, Ringle, & Gudergan, 2017).

3.2.2. Measures

Generative AI self-efficacy (4 items) was measured by adapting Wang and Chuang (2024), which includes subdimensions such as information retrieval, content generation, and ethical decision-making. For example: "I am confident in my ability to use generative GAI tools to assist in academic writing." Generative AI literacy (5 items), adapted from the Generative AI Literacy Scale (GAILS) by Liu et al. (2025), includes domains such as technical understanding, critical evaluation, and responsible use. For example: "I understand how generative AI systems produce outputs and their limitations." Generative AI innovation (4 items) capability was measured by adapting from Ji et al. (2025), assessing teachers' ability to integrate generative AI into novel academic or instructional processes. For instance: "I use generative AI to develop creative solutions for academic challenges." Four items were adapted from Sachs (2001) and Erdoğan, Kaymak, Çoban, and Bora (2025) to assess academic professionalism, emphasising

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responsibility, respect, and scholarly commitment. Example item: "I consistently uphold ethical standards in my academic work." Well-being (4 items) was adapted from Diener et al. (2010), focusing on autonomy, vitality, and satisfaction. Example item: "I feel fulfilled in my academic role." Four items adapted from Asghar et al. (2025) to measure leadership support. Respondents were asked to evaluate their perceived encouragement and guidance from institutional leaders regarding professional development and ethical use of AI. Example item: "My institution's leadership supports responsible and innovative use of AI."

3.2.3. Quantitative Data Analysis

The quantitative data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4.0. Following the recommendations of Hair et al. (2017), the analysis proceeded in two stages: evaluation of the measurement model and the structural model. The measurement model was assessed to ensure indicator reliability, internal consistency, and validity. Indicator loadings exceeded the recommended threshold of 0.60, while Cronbach's alpha and composite reliability values for all constructs were above 0.70, indicating acceptable internal consistency. Average Variance Extracted (AVE) values were all above 0.50, supporting convergent validity. Discriminant validity was confirmed using both the Fornell-Larcker criterion and the Heterotrait-Monotrait Ratio (HTMT), with all HTMT values below the conservative cutoff of 0.85.

Upon confirming the validity of the measurement model, the structural model was evaluated to examine the hypothesized relationships. Path coefficients and their significance levels were obtained through bootstrapping with 5,000 subsamples. Coefficients of determination (R^2) indicated substantial explanatory power for academic professionalism and well-being. All variance inflation factor (VIF) values were well below the threshold of 5, suggesting no multicollinearity issues. To test the moderation hypothesis, an interaction term between academic professionalism and leadership support was computed and included in the model. The significant interaction effect confirmed the moderating role of leadership support, with follow-up simple slope analysis used to interpret conditional effects.

3.3. Qualitative Phase: Semi-Structured Interviews

3.3.1. Participants and Sampling

A purposive sampling strategy was employed to recruit participants for the qualitative phase to complement the quantitative findings and explore underlying mechanisms in greater depth. Ten academic staff members from five universities in Shanxi Province (University A, B, C, D and E) China, were invited to participate in semi-structured interviews. Participants were selected based on variation in their responses to the quantitative survey, particularly on constructs such as GAI self-efficacy, leadership support, and academic professionalism. This approach ensured diversity in disciplinary background, academic rank, and GAI usage, consistent with best practices in explanatory sequential designs (Miraz, Sham, & Annamalah, 2025).

3.3.2. Interview Protocol and Procedure

The interview protocol was developed based on themes and relationships from the PLS-SEM analysis. It was designed to explore three core areas: (1) how generative GAI tools are integrated into academic work, (2) how such integration shapes perceptions of professionalism and responsibility, and (3) how institutional leadership practices support or hinder well-being in this context. Interviews were conducted online via Tencent Meeting, and each session lasted approximately 30–40 minutes. All participants provided informed consent and were assured confidentiality and anonymity.

The semi-structured format allowed flexibility for participants to elaborate on their experiences while ensuring alignment with the theoretical focus of the study. Sample questions included: "Can you describe how you use generative GAI in your research or teaching?" "How has GAI changed your sense of academic responsibility?", and

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"How does your institution support or regulate the use of these tools?" The protocol was refined after pilot testing with two participants who were not included in the final analysis.

3.3.3. Qualitative Data Analysis

All interviews were audio-recorded, transcribed verbatim, and analyzed using thematic analysis with NVivo 14.0. The coding process followed Braun and Clarke's (2006) six-phase approach, beginning with familiarization and initial coding, followed by theme identification, review, definition, and reporting. Two researchers independently coded the transcripts to ensure inter-coder reliability, and discrepancies were resolved through discussion. Themes were validated by checking for representativeness across different participants and institutional contexts. This interpretive process allowed for the identification of explanatory mechanisms and boundary conditions that could enrich the understanding of the quantitative findings.

3.4. Descriptive Statistics

As shown in Table 1, the gender distribution of participants was relatively balanced, with 203 males (52.9%) and 181 females (47.1%). In terms of age, the majority of respondents were 30 years old or younger (n=200, 52.1%), followed by those aged 31–45 years (n=103, 26.8%), and individuals aged 46 or above accounted for 21.1% (n=81). Participants represented a broad range of academic fields, with 57.3% (n=220) from Humanities and Social Sciences and 42.7% (n=164) from Science and Engineering. Regarding teaching experience, 45.1% (n=173) had less than 8 years of experience, 35.7% (n=137) had between 8 and 15 years, and 19.3% (n=74) had more than 16 years of teaching experience. In terms of professional rank, junior-level faculty comprised 38.3% (n=147), intermediate-level faculty accounted for 33.1% (n=127), and senior-level faculty made up 28.6% (n=110). This demographic composition ensured heterogeneity in academic disciplines, career stages, and generational perspectives, providing a comprehensive dataset to explore how GAI competencies relate to academic professionalism and well-being across diverse faculty profiles.

Table 1. Demographic information of the respondents.

Variables	Characteristics	N	%
Gender	Male	203	52.9%
	Female	181	47.1%
Age	≤30	200	52.1%
	31-45	103	26.8%
	≥46	81	21.1%
Study field	Humanities and social sciences	220	57.3%
	Science and engineering	164	42.7%
Teaching experience	≤8 (Year)	173	45.1%
	8-15 (Year)	137	35.7%
	≥16 (Year)	74	19.3%
Job Title	Junior professional title	147	38.3%
	Intermediate professional title	127	33.1%
	Senior professional title	110	28.6%
Total		384	100%

4. RESULT

4.1. Quantitative Analysis (PLS-SEM)

As shown in Table 2, all outer loadings exceeded the recommended threshold of 0.70, indicating acceptable item reliability (Hair et al., 2017). The outer loadings ranged from 0.784 to 0.904 across all constructs, supporting the inclusion of all items. Cronbach's alpha values ranged from 0.832 to 0.891, while CR values ranged from 0.888 to 0.923, all surpassing the conventional cutoff of 0.70, demonstrating strong internal consistency. All AVE values were above the threshold of 0.50, indicating that each construct accounted for more than half of the variance in its

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indicators. Specifically, AVE values ranged from 0.664 (Academic Professionalism) to 0.750 (Generative AI Innovation Capability), confirming convergent validity.

Table 2. Internal consistency and convergent validity.

Variables	Items	Outer loading	Cronbach's Alpha	CR	AVE
Generative AI self-efficacy (GAISE)	GAISE 1	0.852	0.845	0.896	0.683
	GAISE 2	0.840			
	GAISE 3	0.796			
	GAISE 4	0.816			
Well-being (WB)	WB 1	0.830	0.851	0.900	0.692
	WB 2	0.853			
	WB 3	0.834			
	WB 4	0.809			
Generative AI literacy (GAIL)	GAIL 1	0.832	0.891	0.919	0.696
	GAIL 2	0.825			
	GAIL 3	0.834			
	GAIL 4	0.858			
	GAIL 5	0.823			
Academic professionalism (AP)	AP 1	0.810	0.832	0.888	0.664
	AP 2	0.829			
	AP 3	0.797			
	AP 4	0.824			
Generative AI innovation capability (GAIIC)	GAIIC 1	0.904	0.889	0.923	0.750
	GAIIC 2	0.851			
	GAIIC 3	0.844			
	GAIIC 4	0.859			
Leadership support (LS)	LS 1	0.893			
	LS 2	0.784			
	LS 3	0.837	0.848	0.898	0.687
	LS 4	0.797			

As shown in Table 3, all constructs met the Fornell–Larcker criterion (Fornell & Larcker, 1981): the square root of the AVE for each construct (diagonal values) exceeded its correlations with all other constructs (off-diagonal values). In addition, all HTMT values were well below the conservative threshold of 0.85, supporting discriminant validity (Henseler et al., 2014). The highest HTMT value observed was 0.679 (between Well-being and Academic Professionalism), below the threshold indicating problematic collinearity or conceptual overlap. The interaction term (LS*AP) also showed low HTMT correlations with the original constructs, further supporting its distinction as a moderator.

Table 3. Discriminant validity.

Construct	1	2	3	4	5	6	7
The Fornell–Larcker criterion							
AP	0.815						
GAIIC	0.524	0.866					
GAIL	0.491	0.335	0.834				
GAISE	0.521	0.356	0.346	0.826			
LS	0.399	0.163	0.151	0.124	0.829		
WB	0.571	0.243	0.189	0.265	0.432	0.832	
HTMT criterion							
AP							
GAIIC	0.608						
GAIL	0.568	0.377					
GAISE	0.616	0.408	0.394				
LS	0.474	0.186	0.171	0.142			
WB	0.679	0.278	0.216	0.310	0.503		
LS*AP	0.276	0.099	0.162	0.096	0.403	0.046	

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The structural model results are presented in Table 4. All hypothesized paths were statistically significant at the $p < 0.001$ level. GAISE positively and significantly influenced AP (β=0.311, t=7.223), supporting H1. Similarly, GAIL also positively predicted AP (β=0.276, t=6.422), supporting H2. GAIIC further predicted positively to AP (β=0.321, t=7.964), validating H3. Moreover, AP strongly influenced WB, with a significant path coefficient (β=0.511, t=12.305), thus supporting H4. Additionally, LS and AP's interaction effect on WB was statistically significant (β=0.267, t=7.642), confirming the moderating effect and supporting H5. As shown in Figure 2, leadership support positively moderates the relationship between academic professionalism and well-being. When leadership support is high, the effect of professionalism on well-being is significantly stronger than when support is low. The R^2 values indicated that the model explained 46.5% of the variance in Academic Professionalism and 44.9% of the variance in Well-being. These findings suggest a substantial explanatory power and validate the proposed structural framework. Appendix 1 presents the structural paths in SmartPLS4.

Table 4. Direct effect analysis.

Hypothesis		Beta	STDEV	t-value	p-value	LL	UL	Result
H1	GAISE->AP	0.311***	0.043	7.223	0.000	0.239	0.380	Supported
H2	GAIL -> AP	0.276***	0.045	6.422	0.000	0.207	0.347	Supported
H3	GAIIC -> AP	0.321***	0.040	7.964	0.000	0.255	0.386	Supported
H4	AP ->WB	0.511***	0.042	12.305	0.000	0.443	0.579	Supported
H5	LS* AP -> WB	0.267***	0.035	7.642	0.000	0.207	0.322	Supported

Note: R^2(AP):0.465; R^2(WB):0.449; ***p < 0.001.

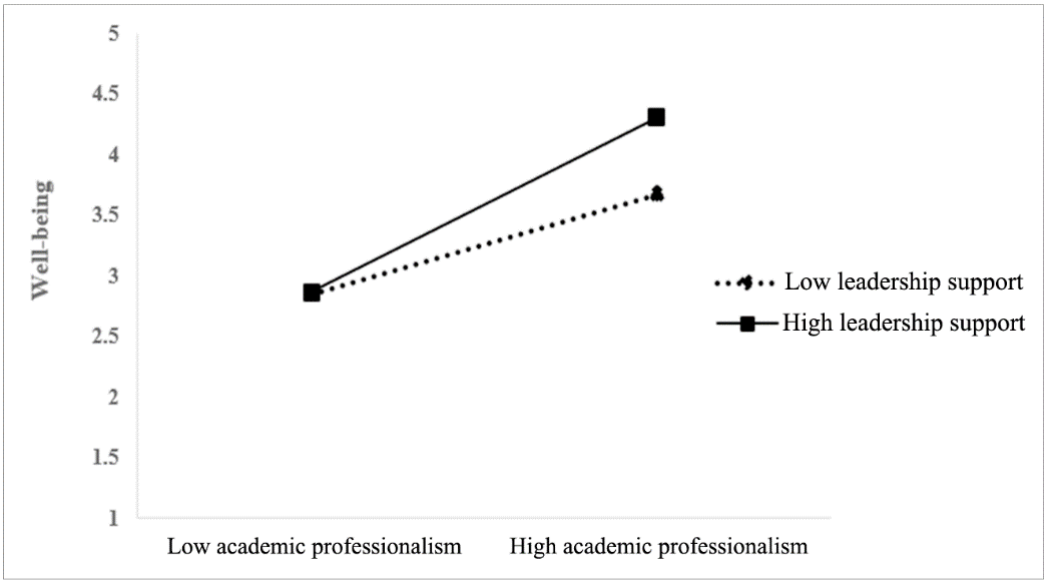

Figure 2. Moderating effect of leadership support.

4.2. Qualitative Analysis (Semi-Structured Interviews)

To complement the quantitative findings, the qualitative phase provides deeper insight into how faculty interpret and experience the relationships identified in the statistical model. While the quantitative analysis confirmed the significant effects of generative AI self-efficacy, literacy, and innovation capability on academic professionalism and well-being, the interviews reveal the underlying meanings and contextual nuances of these associations. Three major themes emerged from the semi-structured interviews: academic professionalism, well-being, and leadership support, each revealing nuanced patterns in motivation, stress, and institutional influence. Table 5 presents the coding information of the semi-structured interviews.

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Table 5. Selected codes, subthemes, and illustrative quotes from participants.

Themes	Subthemes	Selected Statements
Generative AI & Professional Integrity	Cautious application with ethical awareness	"I use ChatGPT for outlines but avoid it for grading or core writing; I don't want to cross ethical lines." (T2)
		"It helps me brainstorm, but I always double-check the facts before using them in my syllabus." (T7)
		"Using AI in teaching forces me to rethink what constitutes 'authentic work." (T5)
Enhancing pedagogical standards	Improving feedback and instructional design	"I use AI to simulate student questions and improve my lecture scripts." (T3)
		"I generate alternate explanations using GPT so my students with diverse backgrounds can better understand difficult concepts." (T6)
		"It's not a shortcut for me, it's more like a silent collaborator that helps me prepare better content." (T1)
Relief from cognitive load	Reducing repetitive work and saving time	"It helps me draft recommendation letters; I just tweak the details. That saves me at least 2 hours a week." (T3)
		"I used to feel drained preparing weekly quizzes, but now I generate variations in minutes." (T6)
		"It's not about doing less, but feeling less overwhelmed." (T1)
AI-related stress or fatigue	Uncertainty and overreliance concerns	"Sometimes I worry I'm using it too much and losing my own academic edge." (T8)
		"There's this silent pressure to adopt AI fast or be seen as outdated." (T4)
		"I do feel anxious when I see others using it more efficiently, it's like I'm being left behind." (T5)
Institutional encouragement	Policy clarity and resource availability	"Our department head openly encouraged us to experiment with AI in course design, which gave me confidence." (T4)
		"They provided training workshops and even gave us prompt templates to start with." (T2)
		"We received a small grant to integrate generative tools into a module, so support is tangible." (T5)
Cultural climate	Trust and freedom in innovation	"No one's micromanaging how I use AI, I feel trusted to use it responsibly." (T3)
		"The leadership here is open-minded; they do not see AI as cheating but as a skill." (T7)
Ambiguity and pressure	Lack of guidelines increases tension	"We have had no clear policy yet, so I hesitate to use it in grading or assignments." (T6)
		"Some senior staff warned against overreliance, but that's all informal; it creates mixed signals." (T8)

First, regarding academic professionalism, participants consistently emphasised a self-driven pursuit of excellence. Faculty expressed a commitment to high standards regardless of external rewards. One participant noted, "Publishing is not for promotion, but for academic integrity" (T4). Others echoed a sense of internal obligation, such as revising syllabi out of a moral sense of responsibility rather than institutional mandate. In addition, a second subtheme, peer benchmarking and internal comparison, highlighted how colleagues' achievements served as motivational triggers. Comments like "I saw my colleague's project got funded, it motivated me to apply too" (T5) illustrated how personal standards and perceived peer performance shaped academic professionalism.

Second, participants linked GAI use to both relief and stress, shaping their overall well-being. Besides, GAI was seen as a tool to reduce cognitive load, especially in repetitive tasks like quiz generation or feedback drafting. One respondent stated, "It's not about doing less, but feeling less overwhelmed" (T1). However, others expressed a sense of unease about potential overreliance on GAI, reflecting a subtheme of GAI-related stress. For example, T8 admitted, "Sometimes I worry I'm using it too much and losing my own academic edge." These mixed experiences support the dual role of GAI in enhancing well-being while also introducing new psychological pressures.

Furthermore, the theme of leadership support emerged as a key contextual factor moderating the faculty's professional experience with GAI. Where leadership was proactive, offering training, encouragement, and funding, faculty reported greater confidence and willingness to innovate. For instance, "Our department head openly encouraged us to experiment with GAI in course design, which gave me confidence" (T4). In contrast, ambiguous or

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absent leadership signals caused hesitation and anxiety, as reflected in remarks like, "Some senior staff warned against overreliance, but that's all informal, it creates mixed signals" (T8). This pattern aligns with the moderation analysis, which shows that high leadership support strengthened the positive relationship between professionalism and well-being.

Lastly, these qualitative insights reinforce and deepen the quantitative findings, revealing that adopting GAI in academic settings is not merely a matter of skill or access but also of motivation, institutional culture, and psychological safety. Overall, the qualitative findings not only support but also enrich the quantitative results by revealing the mechanisms behind them.

5. DISCUSSION

The finding that GAI self-efficacy significantly predicts academic professionalism is consistent with Social Cognitive Theory, which emphasizes that individuals with high self-efficacy are more likely to demonstrate proactive, goal-oriented behavior (Bandura, 1986). This supports previous studies suggesting that confidence in GAI promotes meaningful academic engagement (Lu et al., 2024; Nazim & Alzubi, 2025; Shahzad et al., 2025). Faculty with stronger self-efficacy are more inclined to use GAI to support ethical academic practices rather than replace them. Similarly, GAI literacy was found to significantly impact professionalism, reinforcing the idea that knowledge and understanding of GAI tools empower faculty to apply them thoughtfully (Chan & Colloton, 2024; Haroud & Saqri, 2025). Literacy fosters functional competence and ethical awareness, enabling educators to maintain high standards of academic responsibility while integrating emerging technologies into their practice. Innovation capability was also a significant predictor of professionalism, supporting the argument that those with higher innovation tendencies perceive GAI as an opportunity to enhance academic work (Francis et al., 2025). This reflects the SCT perspective that innovation is both shaped by and reinforces agentic behavior.

Academic professionalism significantly predicted faculty well-being (supporting H4), consistent with the JD-R model and existing research (Thurston & Hammer, 2022). Professionalism acts as a personal psychological resource, reinforcing intrinsic motivation and promoting mental resilience amid academic challenges. Teachers with a strong sense of academic identity and responsibility often experience higher emotional satisfaction. Finally, the significant moderating effect of leadership support (H5) aligns with the JD-R model, which suggests that situational resources enhance the positive impact of individual resources on happiness (Hammoudi et al., 2023; Samad et al., 2022). When institutions provide clear guidance and support for artificial intelligence applications, teachers are more likely to translate their professional spirit into productive and psychologically satisfying outcomes.

The qualitative results indicate that teachers with high levels of GAI self-efficacy and literacy shared how they use GAI tools to simplify repetitive tasks and develop creative materials. These narratives support a quantitative pathway from self-efficacy and literacy to academic and professional competence. The positive correlation between professional competence and well-being was also reflected in the interviews, with many participants describing how artificial intelligence can help reduce workload and mental fatigue. At the same time, some teachers expressed concerns about excessive dependence and authenticity, which revealed emotional tension consistent with the dual nature of JD-R work demands and resources. Finally, qualitative evidence emphasizes the crucial role of leadership support. Teachers in supportive environments reported feeling capable of exploring artificial intelligence, while other teachers reported feeling pressured due to policy ambiguity or resistance.

6. CONCLUSION

6.1. Theoretical Implications

This study makes several theoretical contributions to the literature on AI integration in higher education, particularly by integrating SCT and the JD-R Model. By examining GAI self-efficacy, literacy, and innovation capability as predictors of academic professionalism, the study extends SCT by demonstrating how beliefs in one's

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ability to use AI, combined with concrete literacy skills and creative application, contribute to academic professionalism and well-being. The findings also support the JD-R Model by establishing academic professionalism as a personal psychological resource that buffers against academic stress and enhances well-being. Moreover, the moderating role of leadership support aligns with the JD-R proposition that contextual resources strengthen the influence of internal motivation on well-being. This suggests that leadership support is not merely a background factor but an active amplifier of faculty resilience and job satisfaction in GAI-integrated academic environments. Additionally, the study contributes to the evolving understanding of professionalism in the digital age. The results suggest that professionalism is no longer defined solely by traditional values such as integrity and discipline but now includes technological fluency, ethical GAI use, and innovation capability.

6.2. Practical Implications

The research results provide some practical recommendations for higher education institutions aimed at supporting teachers in adapting to GAI technology. Firstly, universities should cultivate teachers' self-efficacy and literacy in artificial intelligence through targeted training, peer support communities, and convenient technological resources. Secondly, universities should create an atmosphere that encourages innovation. Teachers with strong innovation abilities indicate that their academic participation and sense of responsibility are stronger, which suggests that institutions should reward experimental practice and provide space for creative curriculum redesign. Thirdly, leadership plays a crucial driving role. Both quantitative and qualitative results indicate that supportive leadership can strengthen the relationship between professional competence and happiness. Therefore, university leaders should clearly formulate policies for the application of artificial intelligence, establish ethical standards, and create an atmosphere of trust.

6.3. Limitations and Future Research

First, the data were collected from faculty in a specific regional and institutional context, which may limit the generalizability of the findings. Future studies could expand the sample across countries or disciplines to validate the model more broadly. Second, using cross-sectional data limits the ability to infer causality between variables. Longitudinal or experimental designs are recommended to explore the long-term impact of GAI use on academic behavior and well-being. Finally, while this study focused on positive aspects of GAI capabilities, future research could examine negative consequences such as dependency, ethical risks, or resistance to adoption. Additionally, other moderating variables, such as organizational culture or disciplinary norms, may further shape the effectiveness of GAI integration and deserve exploration.

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Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
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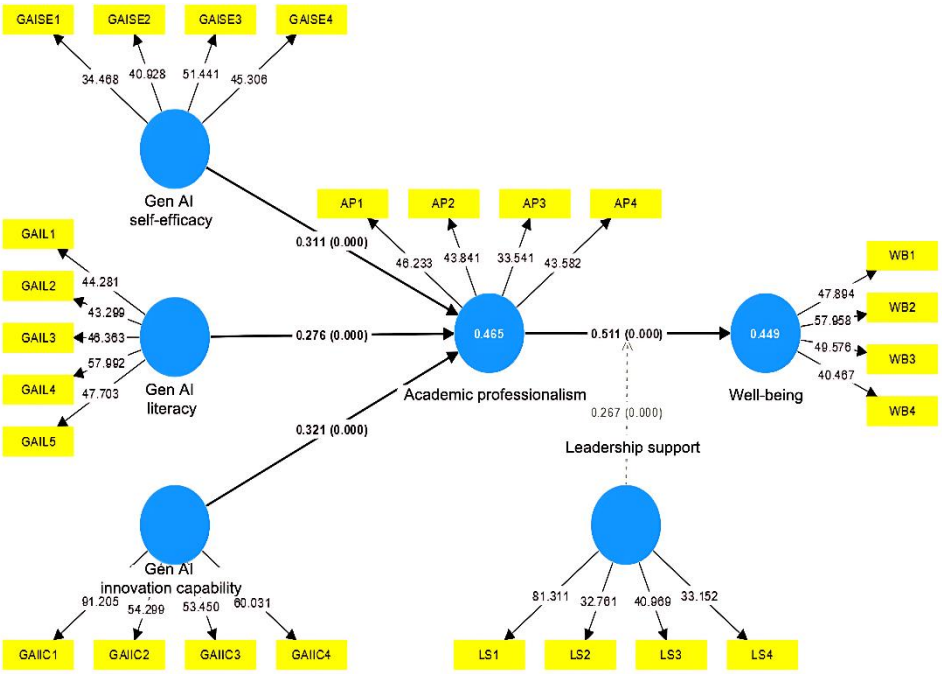

Appendix 1. Structural paths in SmartPLS4.

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