University Science Teachers' Satisfaction and Motivation Towards Generative AI-Tools Integration in Teaching

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Abstract

Generative AI has transformed education, presenting both opportunities and challenges for Science teachers in integrating these tools into their classroom instruction (Barakat et al., 2025; Ramnarain et al., 2024). However, while there is increasing interest in GenAI, most research failed to look into educators' perspectives, especially their satisfaction and motivation towards GenAI integration (Barakat et al., 2025). This study utilized a quantitative descriptive-comparative research design anchored on Fred Davis' Technology Acceptance Model (TAM), which proposes how individuals come to accept and use novel technology. A total population of 30 university Science teachers who were teaching part-time or full-time in the A.Y. 2025-2026 and at least use GenAI-tools participated in the study via a structured questionnaire survey. Findings revealed that teachers reported moderate satisfaction (M = 3.38) and high motivation (M = 3.86) towards GenAI-tools integration, indicating receptiveness but not that high enthusiasm. Further analysis revealed no significant differences in satisfaction (p = 0.839, 0.287) and motivation (p = 0.438, 0.376) towards GenAI-tools integration across years in teaching experience and digital competence. This implies that teaching experience and digital competence do not act as barriers to adopting and appreciating GenAI in the classroom. This study recommends that professional development initiatives and workshops regarding GenAI do not need to be heavily segmented or customized based on a teacher's tenure or current digital competence. Institution-wide training can be designed universally to benefit the entire faculty. However, to increase teacher satisfaction, institutions may need to introduce targeted support systems, such as providing specific use cases tailored for science instruction.

Keywords: Generative AI; TAM; teacher motivation; teacher satisfaction; university Science teachers

1. Introduction

The continuous advancement of Artificial Intelligence and its growing importance in the present educational landscape represent a significant shift in how knowledge is acquired and shared (Barakat et al., 2025). The emergence of Generative AI (GenAI), a subset of AI that can create new content such as texts, images, or codes through advanced machine learning techniques, not only changed how technologies and resources are used but also, dramatically transformed the teaching-learning process (Almasri, 2024; Ramnarain et al., 2024; van den Berg, 2024). Recent studies revealed that GenAI can improve instructional processes by allowing teachers to create refined lesson plans with more focused educational outcomes, promptly assess student work through automation, provide impartial personalized feedback to students, and organize educational resources tailored to students' contexts and needs— thereby moving away from the traditional "*one-size-fits-all*" approach to education (Barakat et al., 2025; Almasri, 2024; Alshorman, 2024; van den Berg, 2024). In Science education, where lessons are mostly characterized by abstract concepts and technical language, GenAI offers promising applications for providing an interactive, collaborative, and personalized learning to students by using it for visualization of theoretical concepts, virtual simulations/experiments, immersive experiences, and tailoring lesson plans to adapt to specific learning needs (Almasri, 2024; Alshorman, 2024; Ramnarain et al., 2024; Shi et al., 2024). However, it must be noted that the effective integration of this technology in our classrooms heavily depends on the teachers' satisfaction and motivation towards their use (Gârdan et al., 2025). Teo (2011) highlights that teacher satisfaction with digital tools is influenced by perceptions of utility, ease of implementation, and workload reduction. In the context of GenAI, research suggests that educators who perceive AI as supportive and not burdensome are more likely to adopt it consistently (Bawaneh et al., 2025). Satisfaction is also tied to how effectively AI aligns with existing pedagogical beliefs and classroom needs. Teachers' perceptions of the usefulness of GenAI applications in the classroom significantly influence their readiness to adopt and incorporate AI into their teaching practice. If teachers perceive AI applications as beneficial in enhancing student learning outcomes, they are more likely to be motivated and ready to use AI in their science curriculum (Demir & Güraksin, 2022). Additionally, Zhao et al. (2022) found that teachers' satisfaction with AI tools varies significantly based on their comfort level with technology and their understanding of AI capabilities and limitations. Teachers with higher digital literacy reported more sustained satisfaction over time.

The Technology Acceptance Model (TAM), initiated by Fred Davis in 1989, proposes that *perceived ease of use (PEOU)* and *perceived usefulness (PU)* predict an individual's attitude towards and behavioral intention to adopt a new technology (Davis, 1989; Masrom, 2007; Marangunić & Granić, 2014). This is also applicable to educational settings, where integration of new technologies is becoming increasingly common (Barakat et al., 2025; Ramnarain et al., 2024; van den Berg, 2024). Despite this, there is a considerable lack of research exploring Science teachers' acceptance of GenAI, and their satisfaction and motivation towards its use, specifically in the Philippine context. Barakat et al. (2025) extended TAM by incorporating trust and perceived risk factors specific to AI adoption in education. Their modified model explained 72% of the variance in teachers' intention to use GenAI tools, with trust emerging as a significant mediator between perceived usefulness and behavioral intention. The increasing interest in integrating AI into science education highlights the need for science teachers' readiness to implement this technology, which remains a significant challenge (Barakat et al., 2025; Gunsaldi et al., 2025). Several studies suggested that while teachers generally have a positive attitude towards using GenAI-tools in teaching science, they face challenges such as limited knowledge and access to AI resources, concerns about job security, and the need for training and support. Despite these challenges, it is crucial to provide teachers with the necessary training and resources to effectively integrate GenAI-tools into their science classrooms (Almasri, 2024; Alshorman, 2024). At local universities, it is apparent that there is currently no data relating university Science teachers' satisfaction and motivation towards the use of GenAI-tools in their classroom instruction. Hence, this study aimed to address this gap by exploring the satisfaction and motivation of university Science teachers towards the integration of GenAI in their instructional processes. It also compared these factors based on their years in teaching and digital competence.

Specifically, this study aimed to fulfill the following:

1. To assess level of satisfaction of university Science teachers in the integration of GenAI-tools in teaching.
2. To assess the level of motivation of university Science teachers in the integration of GenAI-tools in teaching.
3. To determine whether significant differences exist in the levels of satisfaction and motivation of university Science teachers in the integration of GenAI-tools in teaching. In terms of:
    a. Years in Teaching
    b. Digital Competence

This study will be beneficial to the university Science teachers because it will help them reflect on their attitudes, experiences, and readiness on GenAI-tools integration in their instructional practices. The findings of this study may potentially guide practice, policy, and future studies across various stakeholders.

2. Methodology

2.1 Research Design

This study employed a quantitative descriptive-comparative research design to investigate the satisfaction and motivation levels of university Science teachers towards the integration of GenAI-tools in their teaching practices. The descriptive component aimed to characterize the current state of teachers' satisfaction and motivation, while the comparative component examined significant differences and relationships across various demographic and professional variables. The researcher deemed the descriptive-comparative approach as appropriate for this study because it allows for both the systematic description of phenomena and the comparative analysis of differences between groups (Creswell & Creswell, 2018). This design enabled the researcher to gather comprehensive data about teachers' attitudes, perceptions, and experiences with GenAI-tools while simultaneously comparing how these factors vary across different teacher characteristics such as years in teaching and digital competence.

2.2 Research Locale

This study was conducted at a local university in Eastern Visayas Region, Philippines. It is a premiere teacher education institution known for its commitment to excellence in teacher education and has been at the forefront of educational innovation in the region. The university offers various education programs and has been actively promoting the integration of technology in teaching and learning processes.

2.3 Research Respondents

The respondents of the study were the 30 Science teachers currently teaching at a local university, including both full-time and part-time faculty members. A total population sampling technique was employed due to the relatively small and manageable size of the target population. The essential criteria for choosing the are ensuring that they: (1) must be officially employed by the local university during the A.Y. 2025-2026; (2) must be teaching Science-related courses; (3) must have at least basic awareness of generative AI tools (e.g., ChatGPT, Claude, Gemini). Science teachers who were currently on study leave were not part of the study.

2.4 Research Instruments and Validation

This study utilized a survey method approach for data collection using a four-part structured questionnaire to comprehensively assess the research variables. Part I (Personal Information) captured respondents' names (optional), age, gender, subject specialization, and teaching experience categorized by the Philippine Professional Standards for Teachers (PPST) framework (Beginning: 0–5 years; Proficient: 6–10 years; Highly Proficient: 11–20 years; Distinguished: 21–30 years). Part II (Digital Competence Assessment) used a 5-point Likert scale adapted from Tzafilkou et al. (2023) to evaluate six components (Teaching Preparation, Teaching Delivery & Students' Support, Teaching Evaluation & Revision, Professional Development, School's Development, and Innovating Education), with mean scores interpreted using the scale indicated on the table 1 below. Part III (Satisfaction towards GenAI Integration) utilized a 5-point Likert scale adapted from Bawaneh et al. (2025) covering four dimensions (Content Quality, System Quality, Support Quality, and Overall Satisfaction), while part IV (Motivation towards GenAI Integration) applied a Technology Acceptance Model (TAM)-based scale adapted from Barakat et al. (2025) measuring six constructs (Perceived Usefulness, Perceived Ease of Use, Attitude Toward Use, Behavioral Intention to Use, Social Influence, and Perceived Risk/Anxiety). Mean scores for both GenAI sections (Parts III and IV) were interpreted using an identical five-tier scale: Very High (4.21–5.00), High (3.41–4.20), Moderate (2.61–3.40), Low (1.81–2.60), and Very Low (1.00–1.80).

Table 1. Mean Score Interpretation of Digital Competence

Score Range	Label	Description	Behavioral Indicators
1.00-2.00	Newcomer	Very limited digital tool usage	Aware of potential but rarely uses ICT tools
2.01-3.00	Explorer	Basic digital tool usage	Uses basic ICT tools but lacks systematic approach
3.01-4.00	Integrator	Confident digital tool usage	Systematically uses ICT tools across teaching practice
4.01-5.00	Expert	Creative and critical digital tool usage	Innovatively applies ICT and reflects on effectiveness

To establish validity and reliability, the instrument was first subjected to content validation by three experts in science education, language education, and research methodology, who reviewed the items for contextual appropriateness and relevance. Next, a pilot test was administered to 15 non-participant science teachers at a nearby local university to optimize the questionnaire's clarity and flow. Internal consistency was evaluated using Cronbach's alpha, with a coefficient of 0.70 or higher deemed acceptable. The instrument demonstrated strong reliability, yielding alpha coefficients of 0.75 for the digital competence assessment, 0.82 for satisfaction towards GenAI integration, and 0.86 for motivation towards GenAI integration, ensuring consistent and accurate results for the target population.

2.5 Data Gathering Procedures

This study employed a quantitative descriptive-comparative approach using a survey method with structured questionnaires to examine university Science teachers' satisfaction and motivation levels regarding GenAI-tool integration. Before initiating data collection, ethical clearance was obtained from the institutional Research Ethics Committee (REC) to ensure participant protection, followed by instrument validation and pilot testing. Formal permission was then secured from the University President via an official request letter. Potential respondents were identified using departmental rosters and invited through email and formal letters outlining the study's purpose; these recruitment materials explicitly stated that participation was completely voluntary and entirely independent of academic or departmental evaluations. To participate, respondents were required to submit a signed informed consent form.

Upon receiving consent, the researcher coordinated schedules to administer the survey through two flexible modes to minimize participant burden: face-to-face sessions, with physical questionnaires immediately secured in a locked cabinet, or online via a secure, encrypted survey platform. To maintain strict participant privacy, a coding key was generated to assign pseudonyms, effectively separating identifiable information from the raw data. Following survey completion, respondents received light refreshments as a token of appreciation. Finally, all raw data was digitized, transferred to an encrypted, password-protected drive, and prepared for data analysis.

2.6 Data Analysis

The data gathered from the survey was encoded and analyzed using Jamovi version 2.6.44. Descriptive statistics such as mean, and standard deviation were computed to describe the demographic characteristics as well as their levels of satisfaction and motivation towards the integration of generative AI-tools in teaching. To determine whether there are significant differences in satisfaction and motivation across years in teaching and digital competence, a two-way factorial analysis of variance (ANOVAs) was conducted. The use of a Two-Way ANOVA is particularly appropriate as it allows for the simultaneous examination of the "*main effects*" of each independent variable and, crucially, the "*interaction effect*" between them. This ensured that the analysis accounts for whether the influence of digital competence on a teacher's perception is dependent upon their years of teaching experience, providing a more comprehensive understanding of the data than multiple

one-way tests. Two separate models were analyzed, one with satisfaction as the dependent variable and another with motivation as the dependent variable. If significant differences are found, post-hoc comparisons using Tukey's Honest Significant Difference (HSD) test will be carried out to identify which groups differ. The level of significance was set at 0.05. The results will be presented in tables and figures generated by Jamovi, together with interpretations of both the ANOVA and post-hoc findings.

2.7 Ethical Considerations

Creswell and Creswell (2018) emphasized that a study's anticipated benefits must significantly outweigh any potential risks. Although no specific risks were identified, precautionary ethical measures were employed to mitigate the possibility of unforeseen risks. Respondent benefits featured direct tokens of appreciation (light refreshments), opportunities for instructional reflection, and eventual access to a summary of the findings. Recruitment was initiated via departmental rosters using emails and formal letters detailing the study's scope. Because all respondents chose to complete the survey online, voluntary, uncoerced consent was implied when respondents clicked "Submit" after reviewing the study details, which also explicitly outlined the standard data privacy risks associated with everyday internet use. To guarantee strict confidentiality and anonymity, the researcher assigned pseudonyms to all respondents and managed them using a separate, encrypted coding key file, ensuring no direct link to raw data existed during analysis.

In compliance with the Data Privacy Act of 2012, digital research data was stored in encrypted, password-protected folders on both a secure cloud server and an offline drive, while physical forms were locked in a restricted-access filing cabinet. These materials are accessible exclusively to the researcher and will be securely retained for a five-year verification period before being permanently destroyed via secure wiping software and physical shredding. The researcher declares no conflicts of interest arising from commercial or financial relationships. To uphold scientific integrity and prevent publication bias, a comprehensive dissemination plan will be enacted to share all outcomes—including null or negative results—through peer-reviewed publications and academic conferences using completely anonymized data. Furthermore, plain-language summaries and formal presentations will be delivered to university administrators and department heads, directly utilizing the baseline data to shape institutional policy and better-supported GenAI pedagogical resources.

3. Results and Discussion

3.1 Demographic Profile of the Respondents

In this study, 30 teachers who are teaching Science subjects at a local university, either part-time or full-time for A.Y. 2025-2026 and use GenAI-tools in their teaching, were taken as respondents. Table 2 presents the demographic profile of the respondents according to their years in teaching and digital competence. For interpretation of categories, please refer back to the methodology section.

Table 2. Demographic Profile of the Respondents

Profile	Categories	*f*	%
Years in Teaching	Beginning (0-5 years)	12	40.0
	Proficient (6-10 years)	7	23.3
	Highly Proficient (11-20 years)	3	10.0
	Distinguished (21-30 years)	8	26.7
Digital Competence	Newcomer	0	0
	Explorer	7	23.3
	Integrator	15	50
	Expert	8	26.7

Note: There are 30 respondents of the study.

As shown in Table 2, the largest segment of respondents consists of *beginning* teachers (0–5 years), accounting for 40% (*f* =12) of the total. This is followed by 23.3% (*f* =7) categorized as *proficient* (6–10 years), 10% (*f* =3) as *highly proficient* (11–20 years), and 26.7% (*f* =8) as *distinguished* (21–30 years). These data suggest that the university science faculty is predominantly composed of early-career educators. Also, half of the respondents (50%, *f* =15) are classified as *integrators*, indicating a systematic use of ICT tools throughout their teaching practice. The *expert* category accounts for 26.7% (*f* =8) of the population; which means that these educators not only apply ICT tools innovatively but also critically reflect on their effectiveness. Finally, 23.3% (*f* =7) of the respondents are categorized as *explorers*, representing those who utilize basic ICT tools but have yet to adopt a systematic approach. This suggests that while the majority of the faculty is proficient in digital integration, there remains a distinct segment that requires further professional development to move beyond basic usage.

The survey gathered responses from 30 university Science teachers with varied years in teaching and digital competence. Table 3 below presents the descriptive statistics for overall satisfaction and motivation scores.

Table 3. Descriptive Statistics for Overall Satisfaction and Motivation towards GenAI-tools Integration

	N	Mean	SD	Interpretation
Satisfaction towards GenAI-tools Integration	30	3.38	0.853	Moderate
Motivation towards GenAI-tools Integration	30	3.86	0.575	High

3.2 Level of Satisfaction of university Science teachers in the integration of GenAI-tools in teaching

As presented in Table 3, teachers reported a *moderate level of satisfaction* regarding the integration of generative AI (GenAI) in teaching and learning (M = 3.38, SD = 0.85). While this score indicates a general openness toward GenAI, it suggests that the integration process is currently in a *transitional or experimental phase* rather than a fully optimized one. The standard deviation (SD = 0.85) reflects a notable variance in responses, suggesting that teacher sentiment is varied. This divergence may be rooted in the "*digital divide*" within the faculty, where differences in digital competence and familiarity with GenAI tools create varying levels of ease and frustration. This aligns with the findings of Zhao et al. (2022), which stated that teachers' satisfaction with AI tools varies significantly based on their comfort level with technology and their understanding of AI capabilities and limitations. The study also highlighted that teachers with higher digital literacy reported more sustained satisfaction over time.

Furthermore, the moderate satisfaction may reflect a "*cautious optimism"*—where teachers recognize the potential of GenAI-tools but remain concerned about its reliability, ethical implications, or the time investment required to master new workflows. Bozkurt (2023) notes that science teachers' satisfaction with AI tools was particularly influenced by quality and scientific accuracy of AI-generated content. Beyond technical accuracy, higher satisfaction levels are tied to tangible improvements in student engagement and learning outcomes.

In addition, a strong correlation exists between teacher satisfaction and their confidence in managing potential challenges such as academic integrity concerns and over-reliance on AI. Supporting this, Chan & Hu (2023) found that institutional support is vital; educators who benefit from professional development and peer collaboration reported 40% higher satisfaction rates than those navigating AI integration independently. However, this support remains unevenly distributed. While some educators are proficient in GenAI, others remain overwhelmed by the complexities of implementation (Zhao et al., 2022). This disparity is often fueled by a lack of formal training, underscoring the urgent need for structured resources and institutional guidance (Chiu & Chai, 2020).

Consequently, these results necessitate a more granular investigation. The succeeding analyses will explore whether these satisfaction levels are significantly influenced by years in teaching or established levels of digital competence, helping to identify which specific subgroups may require additional institutional support.

3.3 Level of Motivation of university Science teachers in the integration of GenAI-tools in teaching

In terms of motivation, as shown in table 3, teachers expressed a *high level of motivation* toward integrating generative AI in their teaching and learning (M = 3.86, SD = 0.575). This result suggests that while teachers demonstrate openness and willingness to explore the use of genAI-tools in their teaching practice, their motivation is characterized by professional receptivity rather than deeply established institutionalized use. This trend is corroborated by recent research indicating that while faculty recognize the transformative potential of AI for curriculum design and administrative efficiency, the transition to consistent classroom application remains ongoing (Almisad & Aleidan, 2025; Georgiou et al., 2026).

Notably, the disparity between this high level of motivation and the lower reported satisfaction (M = 3.38) suggests a potential "*intention-behavior gap*," where high perceived usefulness does not immediately translate into successful or seamless user experience (Kilat, 2026). The relatively low standard deviation (SD = 0.58) further indicates a strong consensus among respondents, suggesting a collective faculty orientation toward digital innovation. However, the moderate satisfaction levels imply that practical challenges—such as technical barriers or pedagogical uncertainties—may be inhibiting the transition from motivation to mastery (Farazouli et al., 2025; Khalil et al., 2026). These results suggest that motivation may be influenced by factors such as years in teaching and level of digital competence, which could shape how confident and motivated teachers feel in adopting GenAI-tools (Chiu et al., 2026). Consequently, the following analyses will utilize inferential statistics to determine whether significant differences in motivation exist based on years in teaching experience and levels of digital competence.

3.4 *Differences in the Levels of Satisfaction and Motivation of university Science teachers in the integration of GenAI-tools in teaching based on Years in Teaching and Digital Competence*

The researcher conducted a two-way factorial analysis of variance (ANOVAs) to determine whether significant differences exist in satisfaction and motivation across years in teaching and digital competence. The researcher deemed it particularly appropriate as it allows for the simultaneous examination of the "*main effects*" of each independent variable and, crucially, the "*interaction effect*" between them. Two separate models were analyzed, one with satisfaction as the dependent variable and another with motivation as the dependent variable. A post-hoc analyses was also conducted when applicable.

Table 4 below presents the two-way ANOVA results for teacher satisfaction towards GenAI-tools integration across years in teaching and digital competence.

Table 4. Two-way ANOVA Results for Satisfaction towards GenAI-Tools Integration

	Sum of Squares	df	Mean Square	F	p	Interpretation
Years in Teaching	0.878	3	0.293	0.280	0.839	Not significant
Digital Competence	0.599	2	0.299	0.287	0.754	Not significant
Years in Teaching * Digital Competence	1.534	6	0.256	0.245	0.955	Not significant
Residuals	18.800	18	1.044			

The primary objective of this study was to determine whether significant differences exist in the levels of satisfaction and motivation of university Science teachers towards GenAI-tools in teaching based on their years in teaching and digital competence. The researcher hypothesized that there is a significant difference in the levels of satisfaction and motivation among university Science teachers regarding the integration of GenAI-tools when grouped by years in teaching and digital competence. To test this, a two-way ANOVA (Analysis of Variance) was deemed as the most appropriate statistical analysis.

Prior to conducting the primary analysis, data cleaning was conducted to check for significant outliers using boxplot inspection and no extreme outliers were detected. Then, the data were evaluated for normality and homogeneity of variance. The *Shapiro-Wilk* test indicated that scores for both Satisfaction ($W = 0.941$, $p = 0.096$) and Motivation ($W = 0.955$, $p = 0.225$) were normally distributed ($p > 0.05$). *Levene's Test* confirmed that the assumption of homogeneity of variances was met for both Satisfaction ($F(11, 18) = 1.18$, $p = 0.363$) and Motivation ($F(11, 18) = 1.35$, $p = 0.277$), allowing for the use of parametric two-way ANOVA.

As shown in table 4, the two-way ANOVA conducted to examine the effects of years in teaching and digital competence on teacher satisfaction towards GenAI-tools integration revealed no significant difference. Specifically, the effect of years in teaching was not statistically significant, $F(3, 18) = 0.280$, $p = 0.839$. Similarly, the main effect for digital competence yielded no significant difference in satisfaction scores, $F(2, 18) = 0.287$, $p = 0.754$. Furthermore, the interaction effect between years in teaching and digital competence was not statistically significant, $F(6, 18) = 0.25$, $p = 0.955$. As the overall test was found to be not significant, further post-hoc analysis was not conducted.

Table 5 below presents the two-way ANOVA results for teacher motivation towards GenAI-tools integration across years in teaching and digital competence.

Table 5. Two-way ANOVA Results for Motivation towards GenAI-Tools Integration

	Sum of Squares	df	Mean Square	F	p	Interpretation
Years in Teaching	0.860	3	0.287	0.950	0.438	Not significant
Digital Competence	0.623	2	0.312	1.032	0.376	Not significant
Years in Teaching * Digital Competence	3.090	6	0.515	1.705	0.177	Not significant
Residuals	5.437	18	0.302			

As shown in table 5, the two-way ANOVA conducted to examine the effects of years in teaching and digital competence on teacher motivation towards GenAI-tools integration revealed no significant difference. Specifically, results indicated that motivation levels did not differ significantly across years in teaching, $F(3, 18) = 0.950$, $p = 0.438$ and digital competence $F(2, 18) = 1.032$, $p = 0.376$. The interaction between years in teaching and digital competence was also found to be non-significant, $F(6, 18) = 1.705$, $p = 0.177$. Since overall test was found to be not significant, further post-hoc analysis was also not conducted.

In light of the non-significant findings yielded by the two-way ANOVA for both satisfaction and motivation, the researcher fails to reject the null hypothesis. There is no statistically significant difference in the levels of satisfaction and motivation among university Science teachers regarding GenAI-tools integration when analyzed by years in teaching and

digital competence. This indicates that these demographic and professional factors do not significantly differentiate how educators perceive GenAI-tools.

The finding that years in teaching do not significantly influence satisfaction or motivation suggests a "*perceptual alignment*" among faculty. This aligns with research by Chiu (2021) who argues that the intuitive, natural-language interface of AI tools can lower traditional barriers to entry, potentially bridging the "*experience gap*" often found in older ICT tools. However, these results contrast with established digital divide theories, such as those synthesized in the meta-analysis by Scherer et al. (2019). Their research indicates that teacher experience often serves as a significant moderator in technology adoption, where "*digital immigrants*" (older educators) frequently report lower ease of use and satisfaction compared to their younger counterparts. The lack of significance in this study suggest that GenAI may be a "*disruptive equalizer*" that transcends these traditional demographic divides.

In addition, the finding that self-assessed digital competence did not significantly impact motivation is supported by Zhai et al. (2021). Their review highlights that because GenAI operates on generative logic rather than technical programming, it allows "*newcomers*" to achieve high levels of engagement and utility with minimal prior training. Conversely, this disagrees with the findings of Scherer and Teo (2019) whose meta-analysis of 45 studies found that prior experience and technical competence are robust predictors of a teacher's intention and satisfaction when using new technology. The homogeneity found in this specific cohort of science teachers suggest that the perceived utility of GenAI may be so high that it overrides the typical influence of technical proficiency.

While motivation (M = 3.86) and satisfaction (M = 3.38) were both moderate to high, the fact that motivation scores were higher across all groups suggests that while teachers are driven to use the tool, their actual experience in doing so is slightly less fulfilling. This mirrors the "*Model of AI Integration*" discussed by Ouyang and Jiao (2021), which notes that educators often possess high intrinsic motivation for GenAI due to its promise of efficiency, but their satisfaction is often hindered by systemic challenges like ethical concerns and accuracy.

4. Conclusions

This study aimed to determine the levels of satisfaction and motivation of university Science teachers toward the integration of GenAI-tools in teaching and learning and to examine whether significant differences exist when teachers are grouped according to years in teaching and digital competence. The findings revealed that teachers generally exhibit moderate satisfaction and high motivation toward GenAI integration. Although educators recognize the potential benefits of GenAI in improving efficiency, innovation, and instructional support, their experiences remain influenced by concerns regarding implementation, reliability, ethics, and practical application. Nevertheless, teachers remain highly motivated to adopt and explore GenAI technologies in their professional practice. Moreover, the study found no statistically significant differences in satisfaction and motivation across years in teaching and levels of digital competence. These findings suggest that GenAI-tools may transcend traditional barriers commonly associated with technology adoption, such as age, teaching experience, and technical proficiency. In this context, GenAI appears to function as an accessible and user-friendly technology that can be utilized by educators regardless of professional background.

The study addresses the research gap concerning how university Science teachers perceive GenAI integration in relation to teaching experience and digital competence. The findings extend existing knowledge by suggesting that GenAI adoption may not be as strongly influenced by demographic and technological factors as traditional educational technologies. Instead, the study highlights the importance of institutional support, professional development, and ethical guidance in promoting effective AI integration in education. Overall, the findings support and extend emerging literature on AI integration in education, particularly the idea that GenAI technologies may reduce traditional digital barriers among educators. The study contributes to the growing body of research on AI-assisted teaching and provides evidence that teachers are generally receptive and motivated toward GenAI integration despite existing implementation challenges.

5. Recommendations

Based on the findings and conclusions of the study, the following recommendations are proposed to further improve the integration of generative AI tools in teaching and learning and to guide future research in this field: (1) educational institutions should provide continuous professional development programs focused on the pedagogical, ethical, and practical use of GenAI-tools in teaching. Training programs may help improve teachers' confidence, satisfaction, and effectiveness in integrating AI technologies into instruction. (2) Universities and educational administrators should develop clear institutional policies and ethical guidelines regarding the responsible use of GenAI-tools in teaching, assessment, and academic tasks to address concerns related to academic integrity, misinformation, and over-reliance on AI. (3) Institutions should strengthen technical and instructional support systems by ensuring access to reliable digital infrastructure, AI resources, and collaborative learning opportunities among faculty members. (4) Science teachers should be encouraged to engage in collaborative sharing

of best practices, instructional strategies, and classroom experiences related to GenAI integration to promote more effective and meaningful utilization of AI technologies. (5) Future researchers may conduct similar studies using larger sample sizes and respondents from multiple institutions to improve the generalizability of findings and provide broader insights into GenAI integration in higher education. (6) Future studies may explore other variables that could influence teachers' satisfaction and motivation toward GenAI integration, such as institutional support, AI training, attitudes toward technology, access to resources, teaching specialization, and perceived usefulness of AI-tools. (7) Future researchers may also employ mixed-methods or qualitative approaches to gain deeper insights into teachers' lived experiences, challenges, and perceptions regarding the use of GenAI in teaching and learning.

Acknowledgement

The author expresses profound gratitude to Almighty God for the divine guidance, wisdom, and strength granted throughout the journey of this research. Deepest appreciation is extended to Prof. Fabiana P. Peñeda for her invaluable mentorship, constructive feedback, and unwavering support during the development of this study. Produced as the definitive requirement for *RWP 200: Seminar Paper in Research Writing and Publication*, this work also owes its direction to the meaningful contributions and scholarly insights shared by course peers, whose collaborative discussions greatly helped shape and refine its scope.

Sincere appreciation is likewise extended to the esteemed panel of examiners—Ma'am Majean Placigo, Sir Renz Orville P. Caidoy, and Dr. Lourdes G. Tan, whose critical evaluation and insightful recommendations significantly elevated the overall quality of this paper. The author also acknowledges Dr. Gil Nicetas Villarino, University President, and Dr. Cleofe L. Lajara, Dean of the Graduate School, for providing essential institutional support. Finally, special recognition is due to the research validators— Ma'am Azineth Beth M. Yu, Ma'am Ivy V. Evangelista, and Prof. Reynerio B. Mendoza, whose expert validation and rigorous suggestions fundamentally strengthened the credibility and methodological soundness of this study.

AI Acknowledgement

The author acknowledges the use of Grammarly, OpenAI ChatGPT GPT-5.5, and Google Gemini version 3 for text editing, grammatical proofreading, and structuring assistance during the drafting of this manuscript. The AI were utilized solely to improve the clarity and readability of the text. All final content, interpretations, and conclusions were independently reviewed and verified by the author, who remains fully responsible for the integrity of the work.

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