Determinants of Gamification Acceptance in Training and Development: The Moderating Role of Self-Efficacy

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DOI: https://doi.org/10.47772/IJRISS.2026.100600718

Received: 27 May 2026; Accepted: 01 June 2026; Published: 04 July 2026

ABSTRACT

Gamification based strategies in training and development programmes are increasingly recognised as effective for enhancing learner engagement and improving learning outcomes. However, limited empirical evidence exists on the factors influencing gamification acceptance in professional training contexts. This study examines the effects of performance expectancy, social influence, and perceived enjoyment on gamification acceptance, and investigates self-efficacy as a moderating variable. A quantitative research design was employed, with data collected via questionnaire surveys. A total of 373 valid responses were analysed to test the proposed hypotheses.

The results show that performance expectancy, perceived enjoyment, and self-efficacy significantly influence gamification acceptance, whereas social influence is not significant. Furthermore, self-efficacy significantly moderates the relationship between perceived enjoyment and gamification acceptance only. The findings highlight the importance of performance expectancy, perceived enjoyment, and self-efficacy in driving gamification acceptance, while social influence appears less relevant in this context. The study contributes to gamification adoption literature by integrating self-efficacy as a moderating factor and provides practical implications for designing more effective and engaging training systems.

Keywords: Gamification, Performance expectancy, social influence, perceived enjoyment, Self-Efficacy

INTRODUCTION

In an era of rapid technological advancement and evolving educational practices, higher education institutions increasingly expect lecturers to continuously update their skills and competencies to remain effective educators (Latip et al., 2024). Despite substantial investments in training, many initiatives face challenges related to low participant engagement, which may limit their effectiveness and impact (Wünderlich et al., 2020). Consequently, institutions are seeking professional development approaches that can enhance engagement while delivering measurable learning outcomes.

Gamification, defined as the application of game design elements such as points, badges, rewards, and competition in non-game contexts, has emerged as a promising strategy for increasing motivation, engagement, and participation (Deterding, 2012; Zimmerling et al., 2019). While gamification has been widely adopted in student learning environments, its implementation in lecturers' training and development programmes remains relatively limited. This limitation may be attributed to varying levels of acceptance as

well as challenges related to technological competence, time constraints, and organisational support. Furthermore, the growing preference for interactive and technology-enhanced learning experiences, particularly among younger generations (Yun-Han, 2022), has prompted institutions to redesign training approaches to better meet evolving learner expectations.

Despite the growing interest in gamification for professional training, research examining lecturers' acceptance of gamification in training contexts remains scarce. Existing studies have primarily focused on students or employees in general workplace settings (Latip et al., 2024). Therefore, this study investigates the influence of performance expectancy, social influence, and perceived enjoyment on lecturers' acceptance of gamification in training and development programmes. In addition, it examines the moderating role of self-efficacy in these relationships. The findings are expected to contribute to the development of more effective and engaging professional development programmes for lecturers.

LITERATURE REVIEW

2.1) Unified Theory of Acceptance and Use of Technology Model (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT), developed by Venkatesh et al. (2003), brings together eight technology acceptance models, including the Theory of Reasoned Action (TRA) and the Technology Acceptance Model (TAM). UTAUT identifies four main constructs performance expectancy, effort expectancy, social influence, and facilitating conditions as direct determinants of behavioural intention and usage. The model also accounts for moderating variables such as age, gender, and experience, which may affect these relationships (Venkatesh et al., 2003; Ayaz & Yanartas, 2020).

UTAUT is a reliable method for predicting technology adoption in individual, organisational, and educational contexts (Lee & Xie, 2018; Perinen, 2020). It is especially useful for analysing how new technologies are integrated into training programmes.

2.2) Gamification

Gamification, also known as "gameful design," refers to the intentional integration of game design features, rules, and mechanics into non-game contexts. According to Christopoulos and Mystakidis (2023), gamification primarily utilises digital tools to address complex challenges, enhance participation, and facilitate goal achievement. Bassanelli et al. (2022) and Huang et al. (2024) emphasise that components such as leaderboards, badges, and immersive narratives are intended to reproduce the psychological experiences of gameplay, thereby encouraging positive behavioural change. Gamification is now applied across multiple sectors and is attracting increasing scholarly attention for its potential to foster engagement and support effective learning environments (Wünderlich et al., 2020; Latip et al., 2023).

Within higher education, the application of gamification has evolved beyond basic game mechanics to include comprehensive digital experience design that motivates individuals to achieve professional goals. Research indicates that a substantial segment of the academic population (aged 18–35) is highly receptive to game-based learning, which enhances motivation and skill development across various disciplines (Horizon Report, 2013). In Malaysia, gamification is widely incorporated into teaching practices due to its proven positive impact on student learning outcomes (Tamrin et al., 2022). Malaysian lecturers generally regard these tools as effective for improving teaching quality and student engagement (Eltahir et al., 2023; Latip et al., 2024). Nonetheless, there is growing agreement that educators require targeted training to implement these innovations effectively.

2.3) Performance Expectancy

Performance expectancy is the belief that using a technology will improve job performance or provide tangible professional benefits (Venkatesh et al., 2003; Latip et al., 2022). It is a strong predictor of technology adoption, as educators are more likely to use gamified systems when they see these tools as valuable for achieving professional goals or improving instruction.

Empirical research shows that performance expectancy significantly affects technology adoption in education (Jebril et al., 2024). However, its specific impact on lecturers' adoption of gamified in training and development remains unclear. Therefore, verifying the relationship between performance expectancy and gamification acceptance is essential for this study, which has led to the hypothesis below:

H1: Performance expectancy significantly influences gamification acceptance in training and development

2.4) Social Influence

Social influence refers to the impact of others on an individual's thoughts and actions, both consciously and unconsciously (Venkatesh et al., 2003; Tamrin et al., 2022). In academic contexts, peer support and approval can reduce the perceived risks associated with adopting new technologies. Educators are more likely to adopt positive behaviours and favourable attitudes toward technology when they observe respected colleagues or role models effectively utilising gamified tools (Thomas, 2023)

Asiri (2019) found that social influence strongly predicts whether female educators will adopt gamified applications. Departmental standards and institutional leadership play a significant role in the Malaysian higher education sector, which has a collaborative professional culture. Therefore, this research intends to verify the relationship between social influence and gamification acceptance by proposing the following hypothesis:

H2: Social influence significantly influences gamification acceptance in training and development.

2.5) Perceived Enjoyment

Walt et al. (2024) define perceived enjoyment, or hedonic motivation, as the intrinsic pleasure derived from using a system, independent of outcomes. In the context of gamified in training and development among lecturers this concept encompasses the happiness and satisfaction lecturers experience when engaging with the training system. Existing research indicates that enjoyment is a significant factor influencing continued use. For instance, teachers who perceive gamified tools as inherently rewarding are more likely to integrate them consistently into their teaching practices (Turan et al., 2022).

Mastor et al. (2023) and Zainoddin et al. (2022) demonstrate that individuals are more likely to participate in gamified learning when they feel fully engaged and personally connected to the content. Enjoyable features may serve as a primary motivator for Malaysian educator to remain engaged, particularly given the challenges associated with professional development. Gamification has the potential to transform conventional training into an engaging and interactive experience. Implementing these strategies in professional settings is essential to promote sustained participation beyond mere compliance with requirements. Therefore, verifying the relationship between perceived enjoyment and gamification acceptance is essential for this study, which has led to the hypothesis below:

H3: Perceived enjoyment significantly influences gamification acceptance in training.

2.6) Self-Efficacy

Self-efficacy refers to an individual's belief in their ability to perform actions required to achieve specific goals (Bandura, 1997). In online learning, this is reflected in a teacher's confidence with technology and problem-solving (Mossafaie et al., 2024). Individuals with high self-efficacy persist in learning new systems, while those with low self-efficacy may experience anxiety and avoid technology (Er et al., 2022).

Latip (2022), in the study E-Learning acceptance among student found that self-efficacy has a significant positive moderating effect on the relationships between key determinants of e-learning acceptance and students' behavioural intention. The results indicate that individuals with higher self-efficacy exhibit stronger responses to perceived usefulness and ease of use, which in turn increases their acceptance of e-learning systems. This suggests that self-efficacy enhances the strength of the relationship between performance

expectancy, social influence and perceived enjoyment toward e-learning acceptance, functioning as an important moderating variable in technology adoption.

Although these studies highlight the mediating role of self-efficacy, limited research has examined it as a moderating variable in shaping the relationship between key determinants (performance expectancy, social influence, and perceived enjoyment) and gamification acceptance in training. Therefore, this study extends existing literature by investigating the moderating effect of self-efficacy on these relationships in the context of e-gamification acceptance, leading to the development of the following hypotheses:

H4: Self-efficacy significantly influences gamification acceptance in training.

H5: Self-efficacy strengthens the relationship between performance expectancy and gamification acceptance in training.

H6: Self-efficacy strengthens the relationship between social influence and gamification acceptance in training.

H7: Self-efficacy strengthens the relationship between perceived enjoyment and gamification acceptance in training.

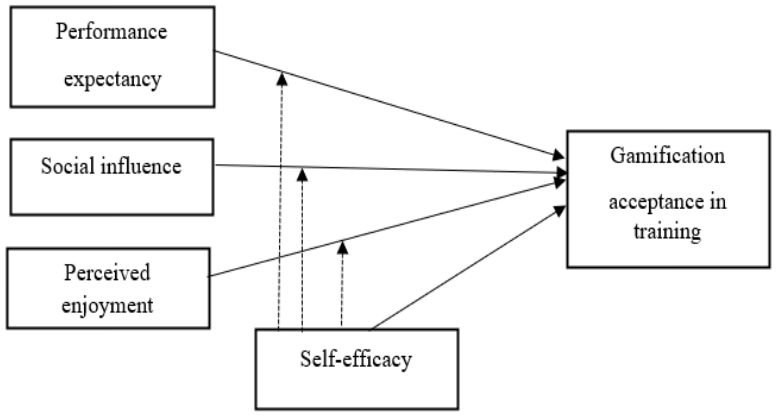

Figure1: Research Framework

METHODOLOGY

A correlational study employing a non-contrived, cross-sectional design was implemented to address the research objective. The target population comprised academicians from higher education institutions in Malaysia, aged 20 years and above. Due to the lack of a comprehensive sampling frame, purposive sampling was utilised to select participants. Data collection was primarily conducted through online and email surveys to maximise population coverage. To enhance outreach, the survey URL and QR code posters were disseminated via official university emails, social media platforms, and relevant social groups. Additionally, an online research page was created to further promote the study. Participation was voluntary, and all participants received an information sheet detailing the study's objectives, potential risks, and other relevant information prior to providing consent.

A pilot study involving 30 respondents was conducted to ensure methodological rigour. This phase assessed the feasibility of the research design, including considerations of time, cost, risks, and anticipated outcomes. The survey instrument's reliability was also confirmed, with all construct scores exceeding the recommended threshold of 0.70 (Hair et al., 2017).

The initial survey generated 441 responses. After data screening and outlier removal, 373 valid responses were retained for analysis. This sample size exceeded the minimum requirement of 190, based on the guideline of 10 respondents per survey item (19 items in total) (Hair et al., 2024). The dataset contained no missing values, as

confirmed by the MCAR test. All identified outliers were addressed accordingly. Hypothesis testing was conducted using SmartPLS software.

The study examined five key constructs: gamification acceptance, performance expectancy, social influence, perceived enjoyment, and self-efficacy. Survey items were systematically adopted and adapted from validated empirical studies, following comprehensive analysis and critical review (Daragmeh et al., 2021; Klaiber & Kok, 2022; Latip et al., 2020; Mastor et al., 2023; Rahi et al., 2019; Roslan et al., 2023; Samar et al., 2019; Tamrin et al., 2022; Tan et al., 2019; Turan et al., 2022).

Data Analysis

Respondent Profile

A background analysis of respondents was conducted to provide insight into their demographic profiles (see Table 1). Of the respondents, 62.5% were male and 37.5% were female. The largest age group was 36 to 40 years (40.5%), followed by 26 to 30 years (27.1%), 41 to 45 years (15.3%), 51 years and above (7.8%), 31 to 35 years (6.1%), 46 to 50 years (2.7%), and 20 to 25 years (0.5%). In terms of education, 61.7% held a bachelor's degree or equivalent, 27.1% a master's degree or equivalent, 10.7% a doctorate or equivalent, and 0.5% a diploma, advanced diploma, or Malaysian Skills Diploma. For teaching experience, 44.8% had 6 to 10 years, 26% had 11 to 15 years, 11.8% had 21 years or more, 8.8% had 16 to 20 years, and 8.6% had 5 years or less.

Table 1: Demographic profile (Authors' own source)

Demographics		**Frequency**	**Percent**
Gender	Female	140	37.5
	Male	233	62.5
Age	20 to 25	2	0.5
	26 to 30	101	27.1
	31to 35	23	6.1
	36 to 40	151	40.5
	41 and 45	57	15.3
	46-50	10	2.7
	51 and above	29	7.8
Level of education	Diploma/Advance Diploma/ Malaysian Skills	2	0.5
	Bachelor's degree or equivalent	230	61.7
	Master degree or equivalent	101	27.1
	Doctorate or equivalent	40	10.7
Years of experience in	5 years and below	32	8.6
	6 – 10 year	167	44.8

education	11- 15 year	97	26.0
	16- 20 year	33	8.8
	21 year and above	44	11.8
Total		**373**	**100**

Composite reliability, convergent validity and discriminant validity

A comprehensive analysis of the data-collection instruments was undertaken to establish the validity and reliability of the study's findings. Table 2 displays the factor loadings and mean scores for each item, offering a detailed overview of the collected data. Reliability and validity assessments were performed to verify the robustness of the constructs. The results, summarised in Table 3, show that the composite reliability (CR) scores for all constructs surpassed the recommended threshold of 0.70, indicating high reliability. Additionally, the Average Variance Extracted (AVE) scores for each construct exceeded 0.50, confirming strong convergent validity (Hair et al., 2024). Discriminant validity was evaluated using the heterotrait-monotrait ratio of correlations (HTMT). All constructs demonstrated HTMT scores of 0.90 or lower, meeting the criteria for discriminant validity (Hair et al., 2024). Collectively, these results provide robust evidence for the reliability and validity of the study's instruments and analyses, supporting the accuracy and credibility of the research outcomes.

Table 2: Factor loading and mean score of survey items (Authors' own source)

No	**Items**	**Load.**
Performance Expectancy		
PEX1	Using gamification in training improves my performance	0.851
PEX2	Gamification in training will boost my productivity	0.867
PEX3	Using the gamification method in training enables me to learn more quickly	0.857
PEX4	Using gamification in training increases my chances of achieving important goals in my work	0.805
Social Influence		
SI1	I use the gamification application because my friends are using it	0.767
SI2	In general, my organization supports the use of gamification in the workplace	0.874
SI3	People who have influenced my attitudes recommend using gamification in training and development.	0.860
SI4	People who are important to me (such as head department friends, etc.) think that it is good for me to use gamification in my training and development.	0.851
Perceived Enjoyment		
ENJY1	I enjoy using gamification in training	0.772
ENJY2	Using gamification tools is a pleasant experience	0.751

ENJY3	I would enjoy using gamification in my training	0.788
ENJY4	When using gamification, I might find that time passes more quickly than I realize	0.731
Self- Efficacy		
SEF1	I am confident that I can successfully learn all relevant training content in gamified training, even if challenging	0.841
SEF2	Even if I get distracted during training, I am confident I can continue learning effectively.	0.737
SEF3	I can use the game without needing anyone to explain how it works	0.793
SEF4	I am confident in my ability to learn, even on a bad day	0.567
Gamification Acceptance		
GAC1	The Gamification method in training was useful for training.	0.574
GAC2	I recommend that others use the gamification method in training.	0.826
GAC3	I prefer using the gamification method for future training and development	0.845

Table 3: Factor loading and mean score of survey items (Authors' own source)

Constructs	**CR**	**AVE**	**Validity Summary Index (HTMT)**				
			GAC	**ENJY**	**PEX**	**SEF**	**SI**
Gamification acceptance (GAC)	0.798	0.575					
Perceived Enjoyment (ENJY)	0.847	0.581	0.731				
Performance Expectancy (PEX)	0.909	0.715	0.653	0.891			
Self-Efficacy (SEF)	0.829	0.551	0.641	0.704	0.486		
Social Influence (SI)	0.904	0.704	0.553	0.872	0.770	0.602	

Direct Path Hypothesis Testing

A summary of the direct path analysis is presented in Table 4. The structural equation modelling of the analysis is presented in Figure 1. Overall, only three of the four direct path analyses tested were significant, with gamification acceptance in training and development as the dependent variable. The analysis revealed that a one-standard-deviation increase in performance expectancy was associated with a 0.211 increase in gamification acceptance, supporting H1 (PEX → GAC: $\beta = 0.211$, $t = 3.039$, $p = 0.002$). However, the analysis demonstrated that a one-standard-deviation increase in social influence was associated with a decline of -0.042 in gamification acceptance, not supporting H2 (SI → GAC: $\beta = -0.042$, $t = 0.623$, $p = 0.533$).

Next, a one-standard-deviation increase in performance expectancy was associated with a 0.211 increase in gamification acceptance, supporting H2 (PEX → GAC: $\beta = 0.211$, $t = 3.039$, $p = 0.002$). Additionally, perceived enjoyment increased by 1 standard deviation, and gamification acceptance rose by 0.253, supporting H3 (ENJY→ GAC: $\beta = 0.253$, $t = 3.835$, $p = 0.000$).

Lastly, the analysis demonstrated that a one-standard-deviation increase in self-efficacy was associated with a of 0.257 increased by 1 standard deviation in gamification acceptance, supporting H4 (SEF → GAC: β = 0.257, t = 4.994, p = 0.000).

Table 4: Summary of the direct path analysis

Direct hypothesis testing								
H	**Relationship**			**Path coefficient (*β*)**	**STDEV**	***t*-value**	***p*-value**	**Decision**
1	PEX	→	GAC	0.211	0.069	3.039	0.002	Supported
2	SI	→	GAC	-0.042	0.067	0.623	0.533	Not Supported
3	ENJY	→	GAC	0.253	0.066	3.835	0.000	Supported
4	SEF	→	GAC	0.257	0.051	4.994	0.000	Supported

The moderating effect of self-efficacy

To test the moderating effect, we used PLS-SEM to conduct an interaction analysis. We tested three interactions to see if the moderator variables influenced the link between the independent and dependent variables (GAC).

Moderation implies an interaction effect. Introducing a moderating variable changes the direction or strength of the relationship between two variables. Based on the results in Table 5, the interaction between Self-Efficacy and Perceived Enjoyment on Gamification Acceptance was statistically significant (β = -0.155, t = 2.243, p = 0.025), supporting H7. This means Self-Efficacy moderates the relationship between Perceived Enjoyment and Gamification Acceptance. The negative coefficient suggests that higher Self-Efficacy weakens the positive relationship between Perceived Enjoyment and Gamification Acceptance.

The interaction effects of Self-Efficacy with Performance Expectancy (H5) and Social Influence (H6) were not significant (p > 0.05). Self-Efficacy does not moderate these relationships.

Examining the interaction plot (Figure 2) for the significant moderation (Self-Efficacy × Perceived Enjoyment) showed that all slopes were positive. This indicates a consistent positive relationship between Perceived Enjoyment and Gamification Acceptance for all levels of Self-Efficacy. However, the slope was steeper for those with low Self-Efficacy and flatter for those with high Self-Efficacy. This demonstrates a weakening, or buffering, moderation effect. When Self-Efficacy is low, the positive impact of Perceived Enjoyment on Gamification Acceptance is stronger.

Table 5: Summary of the moderating analysis testing

Moderating hypothesis testing								
H	**Relationship**			**Path coefficient (*β*)**	**STDEV**	***t*-value**	***p*-value**	**Decision**
5	SEF*PEX	→	GAC	0.054	0.073	0.745	0.456	Not Supported
6	SEF*SI	→	GAC	0.087	0.075	1.162	0.245	Not Supported
7	SEF*ENJY	→	GAC	-0.155	0.069	2.243	0.025	Supported

Figure 2: Interaction plot of moderating analysis between Self-Efficacy and Perceived Enjoyment on Gamification Acceptance.

DISCUSSION

With an emphasis on performance expectancy, social impact, perceived enjoyment, and the moderating function of self-efficacy, this study investigated the elements influencing gamification adoption among lecturers in training and development environments. Based on the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Technology Acceptance Model (TAM), the results offer valuable insights into how academicians observe and utilise gamified training methods.

Direct Path Analysis on Gamification Acceptance

The results strongly support H1, demonstrating a significant positive relationship between performance expectancy and acceptance of gamification. This finding is consistent with Venkatesh et al. (2003) and Latip et al. (2022), who define performance expectancy as the belief that technology enhances job performance or offers professional benefits. In this context, benefits include improved teaching outcomes and training effectiveness. These results reinforce TAM and UTAUT, which highlight perceived utility as essential for technology adoption. Instructors in professional development prioritise resources that yield measurable improvements in efficiency and learning outcomes.

The study also found that perceived enjoyment is a strong predictor of gamification acceptance, confirming Hypothesis 3 (H3). This indicates that intrinsic motivation, such as fun, challenge, and interactivity, significantly influences the adoption of gamified learning resources. These findings are consistent with those of Mastor et al. (2023) and Zainoddin et al. (2022), who observed higher adoption rates among users who experienced greater engagement and interaction. The significant role of perceived enjoyment suggests that instructors value both the engaging experience and the practical benefits of gamification, supporting previous research on the importance of hedonic motivation in adopting interactive technologies.

However, social influence did not significantly impact gamification acceptance, leading to the rejection of Hypothesis 2 (H2). This result contrasts with previous studies, such as Asiri (2019) and Thomas (2023) which identified social influence as a key factor in educators' adoption of gamified tools. The current findings suggest that lecturers' decisions are guided more by personal pedagogical perspectives than by peer or organisational influence. The professional autonomy common in higher education reduces the effect of external social pressures on instructional choices.

The rejection of H2 indicates that social influence was not a determining factor in lecturers' acceptance of gamification. This finding may reflect the nature of academic work, where instructional decisions are often made independently based on perceived educational value rather than social expectations. From the perspective of technology adoption, lecturers may place greater emphasis on factors that directly enhance teaching effectiveness, such as usefulness and performance expectancy. Furthermore, heavy workloads and time constraints associated with designing and implementing gamified learning activities may further reduce the relevance of social influence in adoption decisions.

The findings also show a strong positive relationship between self-efficacy and gamification adoption. Employees confident in their technological abilities are more likely to integrate gamified teaching methods. As noted by and Mossafaie et al. (2024), self-efficacy in digital learning reflects an educator's confidence in using technology and overcoming technical challenges. This study supports the view that higher self-efficacy encourages experimentation with innovative instructional methods. Consistent with Er et al. (2022), high self-efficacy promotes persistence and resilience, reducing technology anxiety and avoidance. These results highlight the importance of technological proficiency and confidence for successful technology integration.

Moderating Effect of Self-Efficacy

The moderation analysis clarified that self-efficacy only moderates the relationship between perceived enjoyment and gamification acceptance within the technology acceptance model. Specifically, higher self-efficacy reduces the dependence on perceived enjoyment to drive acceptance. Self-efficacy has no significant effect on the relationships with performance expectancy or social influence.

This finding provides profound insight into the psychological mechanisms of digital adoption. For instructors with lower levels of self-efficacy who are more susceptible to technology anxiety and avoidance (Er et al., 2022), perceived enjoyment serves as a critical motivational bridge. The motivation derived from the system's entertaining and captivating qualities (Mastor et al., 2023;Walt et al., 2024) effectively compensates for their lack of technological competence. Conversely, instructors with high self-efficacy already possess the confidence to navigate technological platforms and overcome challenges (Mossafaie et al., 2024). They trust their inherent ability to utilize digital technologies effectively, and their acceptance of gamification is resilient and less dependent on the system's enjoyment or entertaining value.

Conversely, the interaction effects of self-efficacy with performance expectancy (H5) and social influence (H6) were not statistically significant. This indicates that a lecturer's level of technical confidence does not change how performance expectancy or social influence impacts their acceptance of gamification. Performance expectancy relies on the tangible professional benefits of the system (Latip et al., 2022; Venkatesh et al., 2003). This remains a consistent priority for lecturers regardless of their technical skills. Similarly, the lack of moderation on social influence confirms that academicians rely on professional autonomy rather than peer pressure when adopting new tools.

However, examining the interaction plot in Figure 3 reveals deeper insight into the significant moderation between self-efficacy and perceived enjoyment. The plot reveals that all slopes are positive, indicating a consistent, positive relationship between perceived enjoyment and gamification acceptance across all levels of self-efficacy. This confirms that enjoyment always plays a beneficial role in technology adoption.

Crucially, the buffering effect is reflected in the interaction slopes, which are steeper for individuals with low self-efficacy and flatter for those with high self-efficacy. In practical terms, individuals with low self-efficacy, who are more prone to technology-related anxiety (Er et al., 2022), experience a stronger positive effect of perceived enjoyment on gamification acceptance. For these lecturers, the engaging and interactive features of gamification (Mastor et al., 2023; Zainoddin et al., 2022) act as a motivational bridge that helps compensate for their limited technological confidence.

In contrast, lecturers with high self-efficacy, who already possess strong confidence in overcoming technological challenges exhibit a flatter slope. Although they still value the enjoyable aspects of gamification,

their acceptance is less dependent on perceived enjoyment, as their existing technical competence and resilience are sufficient to support adoption.

CONCLUSION

In conclusion, this study demonstrates that lecturers are primarily motivated to adopt gamification in training by three factors: performance expectancy, perceived enjoyment, and self-efficacy. Social influence does not serve as strong motivators. Academics tend to value professional autonomy and are typically familiar with contemporary digital tools, leading them to make independent decisions based on practical benefits rather than following colleagues or seeking only basic, user-friendly systems.

A key finding of this research is the distinct role of technical confidence (self-efficacy). For lecturers with limited technical skills or anxiety regarding new technology, the engaging, game-like elements of gamification provide effective motivational support. In contrast, lecturers with high technical confidence are less influenced by these features and focus more on the tool's practical value. Consequently, effective implementation of gamified training requires universities to design programs that balance professional utility with engaging elements, ensuring adequate support for lecturers with lower technical confidence.

Based on these findings, several directions for future research are proposed. First, this model should be tested across different countries and educational levels, including primary and secondary schools, to assess the consistency of these behaviours. Second, given the limited impact of social influence, qualitative methods, such as interviews, could be used to explore why lecturers prefer independent decision-making. Additionally, as this study relied on self-reported questionnaire data, there is potential for response bias and social desirability effects. The cross-sectional quantitative design identified relationships among variables but did not allow for in-depth exploration of the reasons behind the insignificant effects of social influence and perceived enjoyment. Future research may benefit from qualitative or mixed-method approaches to provide deeper insights. Finally, examining additional factors such as age, gender, and teaching experience could further elucidate technology adoption in professional training.

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