A Pilot Study on the Factors Influencing Lecturers' Acceptance of Gamification in Continuing Professional Development (CPD)

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ABSTRACT

The study examines the factors influencing lecturers' acceptance of gamification as a method of continuous professional development (CPD). Gamification uses game components, like points and badges, inside a non-gaming setting to enhance engagement, motivation, and learning. The four independent variables studied in this study are performance expectancy, social influence, personal attitude, and self-efficacy. This study used a quantitative approach and was conducted as a pilot study to evaluate the validity and reliability of the questionnaire instrument. A total of 30 lecturers were chosen using a non-probability sampling method via the snowball technique. The research instrument was adapted from an earlier study and disseminated using an online questionnaire (Google Form). The collected data were analysed using the Statistical Package for the Social Sciences (SPSS) software. The study's findings indicated that all constructs achieved Cronbach's Alpha values over 0.7, indicating acceptable reliability. The findings demonstrate that the instrument used is suitable and valid for application in future comprehensive research.

Keywords: Gamification, Performance Expectancy, Social Influence, Personal Attitude, Self-Efficacy.

INTRODUCTION

In the context of rapid globalisation and digitisation, Malaysia's higher education industry has several obstacles in maintaining optimum quality in teaching and learning. A vital component in sustaining and enhancing this quality is the carry-out of Continuous Professional Development (CPD) for lecturers. CPD indicates the procedures and actions that focus on increasing educators' professional knowledge, abilities, and attitudes to improve student learning further (Guskey, 2000). In higher education institutions, continuing professional development (CPD) serves as both a means of self-improvement and a crucial mechanism for facilitating educational reform following the Industrial Revolution 4.0.

However, implementing CPD among lecturers in Malaysia is challenging. Identified challenges include raised lecturer workload, time constraints, and insufficient motivation (Rajamanikam, 2024; Subasini & Nesamany, 2023). An academic's duties are tied to the scope of responsibilities such as teaching and learning, and they also need to do administrative, clerical, research, and publishing work (Subramaniam & Omar, 2022). The growing complexity of this job has led to professional stress and burnout, diminishing lecturers' enthusiasm and willingness to engage effectively in CPD programs.

At the same time, Malaysia's labour landscape has shifted significantly, with the young and millennial generation poised to become the biggest group of workers in 2023 (Siddharta, 2024). This generation has distinct learning methods and preferences from prior generations; they are more receptive to technology, value interactive

learning, and prefer more flexible and enjoyable techniques. As a result, CPD delivery must be adapted to this generation's requirements and expectations to remain relevant and practical. In this setting, gamification appears as a viable solution to the difficulties of engagement and motivation in CPD.

According to Zimmerling et al. (2019), it is the application of game design features in non-gaming contexts. Reward systems, awards, scores, leaderboards, and organised challenges are all utilised in CPD to encourage user involvement. This strategy has improved motivation, attention, and learning satisfaction in education. (Hamari et al., 2014).

Although The potential of gamification in continuing professional development is increasingly acknowledged, various barriers hinder its widespread implementation. Understanding the factors that influence lecturers' use of gamification in continuing professional development is essential, enabling higher education institutions to develop more targeted and practical implementation strategies.

This research aims to identify and analyse the factors influencing lecturers' acceptance of gamification in their continuing professional development (CPD). This study aims to offer valuable insights to policymakers and training managers by emphasising personal attitude, performance expectancy, and technology self-efficacy, thereby facilitating the development of more inclusive, enjoyable, and impactful CPD programs.

LITERATURE REVIEW

The Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) was proposed by Venkatesh et al. in 2003. This model was developed using eight prior technology acceptance models as a foundation. The UTAUT model examines users' intentions and behaviours regarding technological advancements, emphasising four critical components: performance expectancy, social influence, effort expectancy, and facilitating conditions.

The UTAUT Model has been employed in numerous studies examining user technology acceptance (Latip et al., 2022; Tagoe, 2012; Tamrin et al., 2022). This model has garnered empirical support across various types of technology. The UTAUT Model has been employed to analyse adoption data in multiple sectors, including education (Latip et al., 2022; Mastor et al., 2023), banking (Bhati et al., 2023; Çera et al., 2020) and training (Dahri et al., 2023; Siregar et al., 2022). This study employs UTAUT to analyse the factors affecting lecturers' acceptance and utilisation of gamification methods within a Continuing Professional Development (CPD) framework, particularly regarding educational technologies that necessitate significant readiness, support, and acceptance.

The Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB), formulated by Ajzen in 1991, serves as a behavioural framework for predicting individual intentions and actions across diverse contexts, such as education and technology. Predicting and explaining how people act in specific situations is the goal of the Theory of Planned conduct (TPB), which is based on the Theory of Reasoned Action (TRA) (Latip et al., 2021). This theory posits that an individual's intention to engage in a behaviour is determined by three primary factors: attitude toward the behaviour, subjective norms, and perceived behavioural control.

The Theory of Planned Behaviour has three principal external constructs: attitude, subjective norm, and perceived behavioural control. Attitude is the degree of favourable or adverse evaluation of conduct, whereas subjective norm pertains to the perceived social pressure to adopt or refrain from specific actions. The last predictor is perceived behavioural control, which takes into account all of the details of perceived behavioural performance, such as previous experiences and the obstacles that are currently in existence (Ajzen, 1985, 1991). This study employs the Theory of Planned Behavior (TPB) to identify and analyse the factors influencing lecturers' intentions to utilise gamification in Continuing Professional Development (CPD), addressing the demand for innovation in contemporary higher education.

Gamification

In today's technology age, gamification is gaining popularity in various industries, including education and professional training. It attracts the interest of both the younger and older generations, demonstrating a cross-generational approach. Gamification's popularity has increased significantly in recent years, resulting in an increasing amount of academic research (Wunderlich et al., 2020). According to Latip et al. (2023), gamification systematically incorporates components from games, such as game dynamics and cognitive structures, to increase active involvement, generate intrinsic motivation, and create a pleasurable learning environment. This strategy enables individuals to connect more deeply with activities, boosting their concentration and resilience to learning.

In continuous professional development (CPD), gamification has been identified as an effective tool to improve task efficiency and performance. According to Latip et al. (2023), many organisations are now utilising gamification as a dynamic training technique to help their employees improve their abilities more successfully. Furthermore, (Tamrin et al., 2022) emphasise that gamification features, such as levels, points, and badges, have diverse purposes depending on the context in which they are used. In the context of CPD lectures, these features may be changed to improve motivation, healthy competitiveness, and pleasure with the learning experience, fostering ongoing engagement with the training material.

Performance Expectancy

The Unified Theory of Acceptance and Use of Technology (UTAUT) posits that The term "performance expectancy" relates to an individual's belief in the benefits that a system offers, which in turn influences their desire to make use of that system (Latip et al., 2024; Tamrin et al., 2022). Lecturers who perceive gamification as a means to improve learning outcomes, increase engagement in training, or enhance content comprehension are more inclined to adopt it within the context of CPD. Previous research indicates that users' perceptions of technology effectiveness significantly affect their intentions to utilise it in teaching or professional development (Madzamba and Matorevhu,2023). Therefore, If lecturers believe that gamification can enhance the quality of their learning and career outcomes, they are more likely to embrace it in the CPD process.

A study (Dewi, 2024) examining the factors influencing employees' use of digital game-based learning identified performance expectations as an indicator driver for the acceptance of this training method. Data from 101 respondents indicated that performance expectancy influences employees to accept this training method. This finding aligns with prior research conducted by (Dahri N. et al., 2023), which identified performance expectations as a crucial factor influencing teachers' acceptance of mobile learning technology. The study highlighted the significance of performance expectations in cultivating 21st-century skills and enhancing self-efficacy concerning technology utilisation in training programs. This suggests that, among lecturers, perceptions regarding gamification's practical value and effectiveness in continuing professional development can influence their intention and willingness to utilise it. Consequently, the following hypothesis is proposed based on the aforementioned literature:

H1: Performance expectancy significantly influences lecturers' acceptance of gamification inCPD.

Social Influence

Social influence refers to the impact of others that consciously shapes an individual's beliefs and behaviours (Tamrin et al., 2022; Venkatesh et al., 2003). In higher education, social influence may come from colleagues, department leaders, university administrators, or students. Lecturers may be motivated to conform if they observe that gamification is endorsed, valued, or has become standard practice within their academic community. Management support is crucial, particularly when gamification is viewed as an innovation that aligns with institutional policies or national educational goals.

In a collaborative work environment, lecturers frequently observe and replicate the practices of esteemed or successful colleagues, indicating that social influence may affect the adoption of technologies like gamification. Nonetheless, (Dramani et al., 2022) discovered that social influence did not significantly impact Ghanaian

students' intentions to persist with e-learning during the COVID-19 pandemic, which was more evident in the initial phases of technology adoption. Meanwhile, Thomas (2023) reported that K–8 teachers were more likely to utilise learning management systems (LMS) when role models were present within their peer groups. This indicates that social influence may be crucial in implementing technologies like gamification in lecturer continuing professional development. The below hypothesis was formulated :

H2: Social influence significantly influences lecturers' acceptance of gamification in CPD.

Personal Attitude

Attitude refers to an individual's positive or negative opinion on behaviour, significantly influencing their decision to embrace or oppose technology in a professional setting (Ajzen, 1991). Additionally, personal attitude denotes an individual's perspective regarding objects, individuals, or concepts (Lu et al., 2023). In the context of gamification in continuing professional development (CPD), lecturers' attitudes towards this approach are shaped by their perceptions of its potential to enhance the learning process and their professional growth. Lecturers who view gamification as a practical, enjoyable, and pertinent approach to contemporary teaching requirements will increased interest in its application. Conversely, individuals perceiving it as a trivial activity that does not demand significant time or energy may dismiss it despite having access to the requisite technology.

Prior research indicates that attitude plays a significant role in implementing gamification within educational settings. According to Yildiz et al. (2023), attitude significantly influenced respondents' decisions to implement gamification in learning. The research investigated the influence of gamification on technology acceptance in pre-service social studies teachers, revealing that a favourable attitude significantly determines the acceptance of technology-based learning innovations. This finding aligns with the study by (Ursavaş et al., 2019), which identified attitude towards computer use as the primary predictor of behavioural intention among 324 pre-service teachers and 517 in-service teachers. In higher education institutions, lecturers who also function as professional educators exhibit attitudes towards technology, including gamification in continuing professional development, which are likely to be important. A positive attitude towards gamification is essential for fostering its broader and more effective implementation among academics. Consequently, in light of the above literature, the following hypothesis is stated:

H3: Personal attitude significantly influences lecturers' acceptance of gamification in CPD

Self-Efficacy

Self-efficacy means an individual's confidence in their capacity to execute a task or attain a specific outcome (Bandura, 1997). Self-efficacy is a critical factor in educational technology, influencing an individual's willingness to engage with, adapt to, and persist in using new technologies, including gamification. Lecturers exhibiting elevated self-efficacy are more inclined to confidently investigate innovative pedagogical methods, such as incorporating game elements in continuing professional development. Low levels of self-efficacy may result in doubts regarding the ability to utilise gamification effectively, thereby hindering the adoption of the technology.

Prior research indicates that self-efficacy significantly influences the adoption of digital technologies in educational settings, aligning with the demand for innovation-driven continuing professional development. A study by Sharma & Saini (2022) examined teachers' intentions to persist in utilising diverse digital technologies, revealing that self-efficacy significantly influenced the intention to continue technology use. This finding aligns with the study by Zainal & Matore (2021), which demonstrated that teachers' self-efficacy levels significantly impacted their willingness to adopt innovative teaching methods. This finding suggests that lecturers who possess confidence in their ability to utilise new technologies, such as gamification, demonstrate a greater willingness to implement these tools in Continuing Professional Development (CPD). Individuals with high self-efficacy are inclined to take initiative, exhibit a willingness to explore new methods, and demonstrate greater consistency in the effective implementation of tasks or innovations. The below hypothesis was formulated

H4: Self-efficacy significantly influences lecturers' acceptance of gamification inCPD.

RESEARCH METHODOLOGY

This research used a quantitative design and a pilot study methodology to evaluate the usability and reliability of the constructed questionnaire instrument. Pre-test surveys are crucial in research, facilitating the collection of data from participants before the commencement of the main study or intervention. The surveys are designed to collect baseline data and evaluate participants' initial knowledge, attitudes, or behaviours concerning the study topic (Sreejech et al., 2014).

In this study, a pilot was performed with a sample size of 30 lecturers of higher education in Malaysia. The respondents were selected using a non-probability sampling technique, snowball sampling, where initial respondents suggested that other colleagues participate in the study. This is in line with the recommendation of a minimum of 30 respondents for pre-testing to ensure the validity and reliability of the research instrument (Bujang et al., 2024).

Additionally, data for this pilot study were collected using questionnaires and email. The questionnaire was deemed the most appropriate tool, as supported by (Sekaran, 2010), due to its practicality and effectiveness in obtaining responses from a specific target group. 30 questionnaires were distributed to the selected respondents using Google Forms. Multiple statistical analyses evaluated the instrument's reliability and validity, incorporating Cronbach's Alpha for internal consistency, Composite Reliability (CR), and Average Variance Extracted (AVE) analysis.

RESULTS

Respondent's profile

Based on descriptive analysis, the majority of respondents in this study were female, comprising (76.7%) of the total sample, while (23.3%) were male. Additionally, (50.0%) of the respondents were aged 26 to 30, representing this study's largest demographic. The second largest group included respondents aged 36 to 40, representing (26.7%) of the total sample. Subsequently, 13.3% of respondents fell within the 31 to 35 age range, whereas 6.7% were aged 25 or below. The final 3.3% of respondents were individuals aged 41 to 45 years.

The analysis indicated that most respondents (46.75%) possessed a master's degree or equivalent, constituting the largest group within this category. Additionally, 40% of respondents possessed a bachelor's degree or its equivalent, suggesting that the majority held at least a degree-level academic qualification. Furthermore, 10% of respondents reported possessing a diploma, advanced diploma, or Malaysian Skills Diploma, whereas 3.3% held a doctorate or an equivalent qualification. The respondents in this study comprised individuals with varied educational backgrounds.

Cronbach's Alpha, CR and AVE Analysis

Cronbach's alpha coefficient is a statistical measure for assessing an evaluation's internal consistency or reliability (Thompson, 2023). Cronbach's alpha scores are typically categorised as follows: scores below 0.60 indicate poor reliability, scores of 0.70 and above are deemed acceptable, and scores of 0.80 and above are classified as excellent.

Composite reliability (CR) analysis was also performed to validate the measurement of internal consistency. A minimum and acceptable CR value was 0.70, as mentioned by (Awang et al., 2018; Hair et al., 2021). This analysis confirms that the items within each construct reliably measure the intended concept, thereby enhancing the reliability of the study's conclusions.This indicated that all components exhibited Cronbach's alpha values exceeding 0.70, which showed clear instructions for respondents. The design and sequencing of the research instruments were adequate. This demonstrates that the study's design, structure, and instruments are valid and can consistently measure the constructs examined. This questionnaire is appropriate for the primary survey without substantial modifications.

Moreover, the Average Variance Extracted (AVE) of the measurement model also exceeded 0.50 with the lowest

score of 0.665 (SE) and the highest counterpart of 0.852 (PE). Conclusively, the convergent validity of the pilot study was achieved following (Hair et al., 2019). The convergent validity of the constructs was essential for confirming the connections between the hypothetically related constructs. Table 1.1 presents the Cronbach's alpha, CR, and AVE assessment results.

Table 1.1: Pilot Study Results of Cronbach's Alpha, CR and AVE Analysis

Constructs	Cronbach's Alpha	CR	AVE
Personal attitude	0.891	0.875	0.706
Performance expectancy	0.942	0.958	0.852
Social influence	0.840	0.891	0.676
Self-Efficacy	0.831	0.887	0.665
Gamification acceptance	0.884	0.927	0.809
CR= Composite Reliability AVE = Average Variance Extracted			

DISCUSSION AND CONCLUSION

This pilot study's findings demonstrate that the developed questionnaire instrument for assessing factors influencing lecturers' acceptance of gamification in continuing professional development (CPD) is reliable and valid. The Cronbach's Alpha values for all constructs are above 0.70, demonstrating an acceptable level of internal consistency. Composite Reliability (CR) surpasses the recommended threshold of 0.70, and each construct's Average Variance Extracted (AVE) exceeds 0.50. This suggests that the items within each construct adequately account for variance and demonstrate strong convergent validity (Hair et al., 2019).

Overall, the results of this pilot study offer preliminary evidence for the appropriateness of the instrument employed to assess factors including performance expectancy, social influence, personal attitudes, and self-efficacy within the context of lecturers' acceptance of gamification. Therefore, this instrument may be utilised in a comprehensive study involving larger sample sizes and varied institutional contexts. Despite its limited scale, this study provides initial findings crucial for enhancing the study design and bolstering confidence in the quality of data to be collected.

Future Research

Although this study offers valuable and timely insights, future studies must address several limitations. As a pilot study, the small sample size indicates the generalizability of these findings. Therefore, future studies should involve larger and more diverse samples, including lecturers from various institutions, to ensure these findings can be generalized across the education sector.

Furthermore, this study only focused on the lecturer’s perspective, but other factors, such as institutional support, technological infrastructure, and student-related factors, should also be considered in future studies. Integrating these multiple perspectives will provide a more holistic picture of the use of gamification in continuing professional development (CPD).

In addition, future studies could consider using longitudinal data to assess the long-term impact of gamification on CPD. Due to the evolving nature of gamification tools and CPD frameworks, ongoing follow-up research is needed to ensure the relevance and effectiveness of these tools in the ever-changing educational context.

Lastly, incorporating a mixed methods approach (mixed methods) in future studies could also provide deeper insights by combining quantitative data and qualitative perspectives. This approach would help researchers understand not only the statistical effects of gamification but also aspects of participants’ experiences and perceptions, which could provide further insight into the effectiveness of gamification in CPD.

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