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Intention towards using Gamification among Students in Higher Education: A Conceptual Framework

Roszi Naszariah Nasni Naseri
Faculty of Business and Management, Universiti Teknologi MARA Melaka, Malaysia
Corresponding Author Email: roszinaseri@uitm.edu.my

Norazira Mohd Abas
Faculty of Business and Management, Universiti Teknologi MARA Melaka, Malaysia

Raja Nazim Raja Abdullah
Faculty of Management and Economics, Universiti Pendidikan Sultan Idris, Malaysia

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Abstract
This study's objective is to investigate the factors that influence students' intention in using gamified app as a form of complementary learning strategy during physical class using the Technology Acceptance Model (TAM). In this study, TAM is integrated with technology readiness (TR) as its construct. The extended TAM is expected to explain in a better way on the intention to adopt gamification apps in recent educational environment compared to the original TAM. Gamification technique gives an approach that is more practical to improve the process of learning, especially in terms of the students' motivation. To date, limited research has been done on student's intention to use medium of gamification in higher education institution. Therefore, this study explores the factors that influence the intention of gamification usage among students in higher education institution.
Keywords: Educational Technology, Gamification, Intention to Use, University Students

Introduction

Along with technological progress, gamification has become a popularly used in the educational sector. The concept of gamification is known to derive from various contributions. Gamification is often described as game-play method that is used in non-gaming environments as outlined by (Deterding et al., 2011). Apart from that, previous literature emphasized the gamifications' role as an action of effectuating game experiences as well as behavioural outcomes by means of motivation-activation method. According to Xu (2011), using gaming method in a particular context enables a tedious activity to be more motivating and interesting. Various studies conducted in the effect of gamification in education also show that gamification influences students' learning positively, hence it is now becoming a growing trend in education sector (Roslan et al., 2021). Of late, students'

interaction with technology increases, which affects the implementation of innovative education approach in higher education institutions (Aguiar-Castillo et al., 2020). Previous literature also proved that the use of gamification inspires, motivates, and engages students to enhance learning achievement as stated by (Edmonds, 2011; Bozkurt and Durak, 2018). The current generation of students aspires for a varied learning environment which is provided by gamification as a fun, innovative, and motivational learning environment (Kasemsap, 2017). More educators of recent have strongly suggested for online game-based education method to replace the conventional textbooks (Cohen, 2011). As the education sector worldwide have shown successful enforcement of learning-enhancement by using latest technologies, it is therefore important to examine the factors influencing students to use gamification in their learning (Aguiar-Castillo et al., 2020). Albeit being an important scope to be studied, Roslan et al (2021) however reported that there is lack of study being done on factors influencing gamification method in education sector. Hence, this research aims to furnish the insight into the factors influencing students' intention in using gamified app during physical learning environment in higher education institution. Therefore, the objective of this research is to explore the intention towards the implementation of gamification in higher education institution and discuss the major factors influencing it. This study adopts the Technology Acceptance Model (TAM) and technology readiness (TR) as theoretical framework. The research proposes a conceptual model which is aimed to provide better understanding on the intention to use gamification among higher education institution's students.

Theoretical Foundation

In any research work, the hypotheses an empirical study should be based on previous theories as well as well-established models as highlighted by (Colquitt and Zapata-Phelan, 2007). The present research predicts students' attitudes and behavioral intentions as outlined by TAM (Davis et al., 1989). TAM is known as an adaptation from theory of reasoned action (TRA) (Ajzen & Fishbein, 2000) for predicting IS adoption (Davis et al., 1989). According to Davis et al (1989), TAM advocates that PU and PEOU of any information system or technology determine the users' intention. The element in TAM is presented in Figure 1. From the present study's context, PU connotes how the students find it useful to adopt gamification method, while PEOU implies how much the students consider using gamification to be effortless. Meanwhile, attitude stipulates the students' positive or negative belief or evaluation towards adopting the gamification method. Intention signifies the probability that a student will accept gamification. Notwithstanding, TAM originally received various criticisms from previous scholars (Ajibade, 2018). As an example, TAM is said to be insufficient in explaining users' behaviour in technology adoption as mentioned by (Lin et al., 2007). There are also suggestions from previous studies that there is necessity to extend the existing theory of socio-psychological such as TAM by appending additional constructs in any particular contexts such as given by (Perugini and Bagozzi, 2001). For instance, it is necessary to incorporate individual difference variable into the model to recognize the psychological processes in a person's perception of a technology's value. Based on this argument, this study proposes to integrate the technology readiness (TR) construct which extends the TAM. TR translates to individuals' belief and propensity to use innovative technology-based products or services as described by (Parasuraman, 2000; Tang et al., 2021). The extension of TR in the TAM emphasizes from technology systems to consumers, because TR construct is more targetted to individuals. By integrating both of the TAM and TR, this study is able to distinguish

individual differences prior to technological advances. This information is useful to discern the users' psychological process prior to their technology acceptance, also known to be a complex and long journey (Lin et al., 2007).

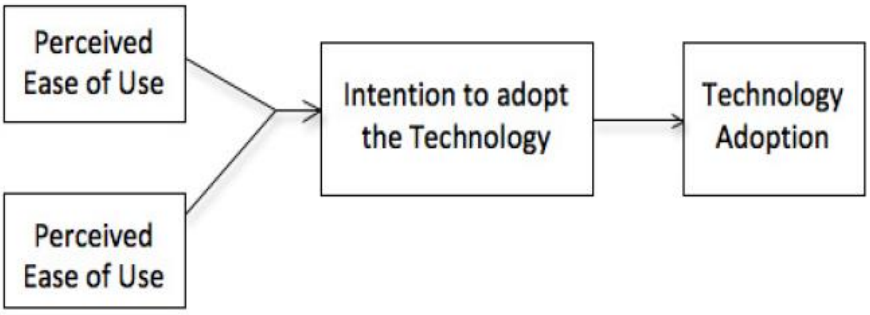

Figure 1. The Technology Acceptance Model
Source. Davis et al (1989)

Literature Review

Technology Readiness

Individuals' disposition towards technology usage is divided into different categories. Meuter et al (2003)'s research discovered a group of people that has particular level of pessimism towards the use of technology or also reffered to as technophobia. Based on the relative strength of openness to technology, a study by Parasuraman and Colby (2015) differentiated technology users into five different categories, from "innovators" to "laggards." Prior to that study, Parasuraman (2000) described TR as a person's general belief on the subject of innovative technology. Apart from that, TR is also known as a diverse concept which is divided by a person's outstanding personality traits in relation to the use of technology. However, in the research by Parasuraman (2000), it was also implied that TR is categorized into positive technology readiness (PTR) as well as negative technology readiness (NTR). The first category, PTR is built upon elements that encourage user's acceptance of new technology which relates to the user's optimism. This situation implies that user has positive view of the use of technology and beliefs that the technology extends efficiency, increased control, and flexibility while also promoting innovativeness. This also motivates the user to be prone in becoming a thought leader and technological pioneer. On the other hand, NTR includes two elements that impede the user's acceptance of new technology. The first element is discomfort, where user has a perceived lack of control and overwhelmed by the technology. The second one is insecurity, where the user feels distrust of technology, as the user feels skepticism whether the technology will be able to properly work. User is also concerned about the harmful consequences that can potentially occur (Parasuraman, 2000).

Technology Acceptance Model

TAM is a theoretical framework which elucidates the usage and adoptation of technological innovation in different contexts as mentioned by (Davis, 1989). The model is formed by two fundamental concepts. The first one is perceived usefulness (PU) which means the degree to which a user believe in a particular system in assisting the person to conduct a task. Meanwhile, perceived ease of use (PEOU), means a person's belief that a certain system, when being used for a specific purpose, would lessen the person's effort. As indicated by Davis (1989), the technology's ability to reduce a person's efforts in doing a specific task should

exceed any effort to learn the method of using the technology. TAM describes more variance of the behavioral intention in relation to the use of technology compared to TRA and TPB, which have been broadly used to demonstrate human behavior in different fields of study.

Hypotheses Development

TR is widely accepted as an important factor that influences a person's acceptance as well as useof new technologies. In a study by Liljander et al (2006), it was mentioned that positive TR factors such as innovativeness and optimism have a positive influence on user's attitude towards use of mobile technology gadgets. Meanwhile, Walczuch et al (2007) investigated the relationships between TR factors and cognitive dimensions of TAM such as PU and PEOU. That study's finding observed that positive TR factors have positive influences towards PU and PEOU, while negative TR factors negatively impact both PU and PEOU. Further to that, research by Lin et al (2007) which investigated consumer attitudes in using online service system, concluded that TR influences intention to use the technology and it is fully mediated by PU and PEOU. Hnce, based on the arguments, the final framework of the current study is proposed, as illustrated in Figure 2.

Previous studies have suggested to divide TR into two factors which are positive and negative. For instance, a study by Jin (2013) which investigated the intention of Facebook users' in using Facebook, has concluded that positive TR positively impacts the users' PU and PEOU when they are using Facebook. Meanwhile, that same study also found that negative TR negatively impacts the users PU and PEOU. In the same vein, the study of Oh et al. (2014) which was done as a cross-cultural study between two countries - South Korea and China investigated on consumers' adoption of mobile internet services based on TAM and TR also found similar findings of positive and negative TR. In particular, that study concluded that South Koreans have higher PU and PEOU as they are driven by positive TR factors, such as optimism and innovativeness compared to users in China. Considering all these relationships, the present study hypothesizes

H1a. Positive TR has a positive influence on PU of gamified apps.
H1b. Positive TR has a positive influence on PEOU of gamified apps.
H2a. Negative TR has a negative influence on PU of gamified apps.
H2b. Negative TR has a negative influence on PEOU of gamified apps.

Davis (1989); Venkatesh (2000) elaborated that in TAM, PEOU is considered as a determinant of PU. When a person perceives ease of use of technology, it is likely for the person to believe that the technology is useful and helpful for a particular purpose. The study of Venkatesh (2000) mentioned that "*the easier a technology is to use, the more useful it can be*" (p. 343). In this case, PEOU and PU are significant predictors of behavioral intention, which is in line with findings in other studies involving technology adaptation (Lunney et al., 2016; Park and Zhang, 2022). Once users perceive ease of using a technology and it has PU, they will accept and adopt the technology for certain purpose. Based on these arguments, the following hypotheses are formed

H3. PEOU has a positive influence on the PU of gamified apps.
H4. PU has a positive influence on the intention to use gamified apps.
H5. PEOU has a positive influence on the intention to use gamified apps.

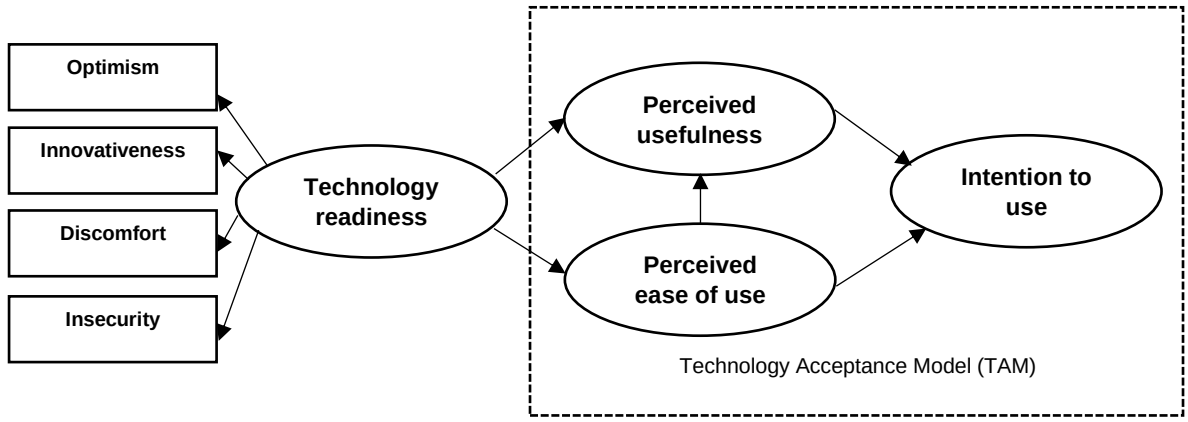

Figure 2. The extended Technology Acceptance Model
Source: Adapted from Lin et al (2007)

Conclusion

Gamification method has been rapidly evolved as emerging technology in various sectors. Henceforth, in education sector, a study that reviews the factors leading to student's intention to use gamification is very significant as students these days are required to experience the prospect of using game technology in non-game contexts to invoke a positive behavioural outcome. The outcome of the research is also critical in identifying the method to intensify teaching and learning experiences and engagement, to furnish students with engaging experiences that will attract their intention, and as an innovative educational training tool. By using gamified technology, it can cultivate the students' interaction with the educators. Hence, it is pertinent for this study to identify the robustness and generalizability of the technology acceptance and technology readiness in assisting educational training tool.

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References

Aguiar-Castillo, L., Hernandez-Lopez, L., De Saa-Perez, P., & Perez-JImenez, R. (2020). Gamification as a motivation strategy for higher education students in tourism face-to-face learning. *Journal of Hospitality, Leisure, Sport & Tourism Education*, *27*, 100267.

Ajibade, P. (2018). Technology acceptance model limitations and criticisms: Exploring the practical applications and use in technology-related studies, mixed-method, and qualitative researches. *Library Philosophy and Practice*, *9*.

Ajzen, I., & Fishbein, M. (2000). Attitudes and the attitude-behavior relation: Reasoned and automatic processes. *European review of social psychology*, *11*(1), 1-33.

Bozkurt, A., & Durak, G. (2018). A systematic review of gamification research: In pursuit of homo ludens. *International Journal of Game-Based Learning (IJGBL)*, *8*(3), 15-33.

Cohen, A. M. (2011). The gamification of education. *The Futurist*, *45*(5), 16.

Colquitt, J. A., & Zapata-Phelan, C. P. (2007). Trends in theory building and theory testing: A five-decade study of the Academy of Management Journal. *Academy of management journal*, *50*(6), 1281-1303.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management science*, *35*(8), 982-1003.

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: defining gamification. In *Proceedings of the 15th international academic MindTrek conference: Envisioning future media environments*, 9-15.

Edmonds, S. (2011). Gamification of learning. *Training and Development in Australia*, *38*(6), 20-22.

Jin, C. (2013), "*The perspective of a revised TRAM on social capital building: the case of Facebook usage*", Information and Management, Vol. 50 No. 4, pp. 162-168.

Kasemsap, K. (2017). The fundamentals of game-based learning. In *Handbook of Research on Instructional Systems and Educational Technology* (pp. 174-185). IGI Global.

Liljander, V., Gillberg, F., Gummerus, J., & Van Riel, A. (2006). Technology readiness and the evaluation and adoption of self-service technologies. *Journal of Retailing and Consumer Services*, *13*(3), 177-191.

Lin, C. H., Shih, H. Y., & Sher, P. J. (2007). Integrating technology readiness into technology acceptance: The TRAM model. *Psychology & Marketing*, *24*(7), 641-657.

Lunney, A., Cunningham, N. R., & Eastin, M. S. (2016). Wearable fitness technology: A structural investigation into acceptance and perceived fitness outcomes. *Computers in Human Behavior*, *65*, 114-120.

Meuter, M. L., Ostrom, A. L., Bitner, M. J., & Roundtree, R. (2003). The influence of technology anxiety on consumer use and experiences with self-service technologies. *Journal of Business Research*, *56*(11), 899-906.

Morosan, C. (2011), "Customers' adoption of biometric systems in restaurants: an extension of the technology acceptance model", Journal of Hospitality Marketing and Management, Vol. 20 No. 6, pp. 661-690, doi: 10.1080/19368623.2011.570645.

Oh, J. C., Yoon, S. J., & Chung, N. (2014). The role of technology readiness in consumers' adoption of mobile internet services between South Korea and China. *International Journal of Mobile Communications*, *12*(3), 229-248.

Parasuraman, A. (2000). Technology Readiness Index (TRI) a multiple-item scale to measure readiness to embrace new technologies. *Journal of service research*, *2*(4), 307-320.

Parasuraman, A., & Colby, C. L. (2015). An updated and streamlined technology readiness index: TRI 2.0. *Journal of service research*, *18*(1), 59-74.

Park, H. J., & Zhang, Y. (2022). Technology readiness and technology paradox of unmanned convenience store users. *Journal of Retailing and Consumer Services*, *65*, 102523.

Perugini, M., and R.P. Bagozzi. 2001. The role of desires and anticipated emotions in goal-directed behaviours: Broadening and deepening the theory of planned behaviour. British Journal of Social Psychology 40 (1): 79–98.

Roslan, R., Ayub, A. F. M., Ghazali, N., & Zulkifli, N. N. (2021). The influence of perceived ease of use, perceived usefulness, social influence, and perceived enjoyment towards continuance intention in using a gamified e-quiz mobile application. *Journal of Institutional Research South East Asia*, *19*(2), 258-285.

Tang, Y. M., Chen, P. C., Law, K. M., Wu, C. H., Lau, Y. Y., Guan, J., ... & Ho, G. T. (2021). Comparative analysis of Student's live online learning readiness during the coronavirus (COVID-19) pandemic in the higher education sector. *Computers & education*, *168*, 104211.

Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information systems research*, *11*(4), 342-365.

Walczuch, R., Lemmink, J., & Streukens, S. (2007). The effect of service employees' technology readiness on technology acceptance. *Information & management*, *44*(2), 206-215.

Xu, Y., Wang, J., Wu, Q., Anpalagan, A., & Yao, Y. D. (2011). Opportunistic spectrum access in cognitive radio networks: Global optimization using local interaction games. *IEEE Journal of Selected Topics in Signal Processing*, *6*(2), 180-194.