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Ethics and Integrity in Accounting and Business: Building Trust in an Intricate World

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Students' Attitudes and Motivation toward Game-Based Learning Adoption Intention

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Abstract

In accounting courses, comprehending the detailed standards can be challenging for students. To address this, we distributed a survey to measure the students' perceptions of using games for learning accounting purposes. This study aims to investigate opinions on students' attitudes and students' motivation towards gaming adoption intention. A total number of 189 undergraduate accounting students from a public university in Malaysia participated in the survey. Data were collected through an online survey and analysed statistically by using Smart Partial Least Squares (PLS) software. The results indicate that students' motivation would have a positive and significant influence on intention to adopt Game-Based Learning (GBL) in the classroom. Game-Based Learning can be seen as a promising approach to enriching learning methods in universities and complements the traditional face-to-face lecture session.

Keywords
Game-based learning, accounting, students' attitude, motivation, adoption intention

1.0 Introduction

Gamification is the use of game mechanics to make learning more interesting (Apostol, ZaharescL & Aleze, 2013). Currently, gamification in education regardless of the field of expertise has led to new ways of teaching, allowing students to experience more stimulating classes with greater motivation than those offered by traditional methods (Westera, 2019). In accounting course, there are a lot of accounting standards for students to digest. Notably, students need to grasp the terminology and fundamentals of the topic quickly in order to understand and apply concepts successfully.

Game-based learning (GBL) is all about using real games to share information, and it functions as a formal teaching method during face-to-face or online classes. The application of GBL is thought to be an innovative educational tool in building students' confidence and creating a more positive attitude toward accounting and sustaining a deeper understanding of accounting principles (Phillips & Graeff, 2014). Prensky (2006) also agreed that GBL is associated with the characteristics to provide motivation and structure through rules and goals, engaging the learner through interactivity, promoting creativity by imposing competitions, challenging problem solving, creating pleasure during the play process as well as enhancing self-esteem by encouraging winning.

Unlike most commercial games, which primarily focus on entertainment, the intention behind Game-Based Learning (GBL) is different. GBL plays a crucial role in educational settings by enhancing student engagement and improving both the quality of learning and its outcomes (López Gavira and Omoteso,

2013). GBL actively involves the exploration of knowledge, prompting players to experience a range of emotions such as pride, frustration, joy, sadness, disappointment, and curiosity (Lee & Hammer, 2011), all of which are key components of the learning process. Consequently, students will be able to develop their cognitive, emotional, and social skills, which are significantly relevant for their future performance as professionals of any given field of knowledge (Liu et al., 2015).

Given the numerous advantages discussed above, this research aims to address the following two research questions:

1. What is the relationship between students' attitudes and their intention to adopt Game-Based Learning (GBL)?
2. What is the relationship between students' motivation and their intention to adopt GBL?"

The shift from classroom-based teaching methods to game-based learning reflects broader trends in technology adoption. However, concerns about students' attitudes and motivation towards adopting GBL persist. Therefore, this research aims to examine the influence of students' attitudes and motivation on their intention to adopt GBL within the context of educational games.

2.0 Literature Review

2.1 Students' attitudes and GBL adoption intention

Voulgari et al. (2020) found that while most student teachers hold moderately positive attitudes toward the educational potential of digital games and intend to use them in the classroom, this contrasts with previous studies that showed higher levels of enthusiasm among pre-service teachers. Despite a reluctance to identify as gamers, the student teachers surveyed did have prior experience with digital games, with varying levels of gameplay frequency. This suggests that current time constraints might limit their gaming activity. The study suggests further research into university background of the students in relation to their attitudes towards games, gaming habits and preferences, would give us further insight on the profile of the students, with implications to the design of appropriate game based learning courses at the university level.

Rahman et al. (2024) conducted a survey of 688 smartphone-based online game players, revealing that customer attitudes significantly influence their intention to use such games. The study found a strong link between the attitude toward smartphone-based online gaming and the intention to engage in it. Attitude was conceptualized through six key factors: perceived emotional value, perceived quality value, social influence, technology gratification, perceived usability, and psychological well-being. These findings underscore the importance of understanding that all are significant drivers explaining the attitude toward smartphone-based gaming.

Yu et al. (2024) investigated the learning attitudes and current attitudes of students toward the introduction of information technology into their curricula. To achieve positive educational outcomes, it is essential for students to adopt constructive attitudes, stay focused on the present learning activities, and avoid disrupting others' learning processes. The introduction of technology in teaching can support these goals by enhancing the learning environment when students approach their studies with the right mindset. In addition, attitudes plays a crucial role in the adoption of technology in various fields, impacting users' intention to use applications, as seen in studies on gamification tools and mobile technology (Kuo & Yen, 2009; Zhu, Lin, & Hsu, 2012; Rezaei, Shahijan, Amin, & Ismail, 2016). Correspondingly, the below hypothesis is proposed:

H1: There is a positive significant relationship between students' attitudes and GBL adoption intention

2.2 Students' motivation and GBL adoption intention

Investigating users' motivation to engage with mobile technology can offer valuable insights into their ongoing engagement behaviors. Motivation can be categorized into three main types: functional, which focuses on efficiency, ease of use, and time-saving aspects; hedonic, which involves fun, enjoyment, and pleasure; and social, which reflects the desire to connect with and share experiences with others (Kim et al., 2013). Understanding these different motivational factors can help in designing more effective and engaging mobile experiences.

Prensky (2003) pointed out that from the perspective of successful learning, motivation is an indispensable condition and that games just happen to provide such a condition. Cheung et al. (2021) explores how various motivational factors influence player loyalty in mobile games. The study highlights three primary motivational dimensions: intrinsic motivation (enjoyment and challenge), extrinsic motivation (rewards and achievements), and social motivation (interaction with other players). The findings suggest that intrinsic motivation plays the most significant role in fostering loyalty, followed by social motivation. By understanding these motivational factors, game developers can better design features that enhance player retention and loyalty.

Meanwhile, Kuo & Kuo (2024) reveals that pre-service teachers who have higher levels of motivation and self-efficacy towards digital game integration tend to exhibit better Technological Pedagogical Content Knowledge of Digital Games (TPACK-G). The findings underscore that enhancing motivation and self-efficacy could be key in shaping pre-service teachers' readiness to use digital games as educational tools. The past literature indicates that motivation theory provides a robust theoretical foundation for examining individuals' intentions and behaviors when adopting new environments (Davis et al., 1992; Kim et al., 2017; Shang et al., 2005; Hsiao and Chen, 2016; Wang et al., 2019). Based on the considerations discussed above and the divergent outcomes observed in previous research, this study postulates the following hypothesis:

H2: There is a positive significant relationship between students' motivation and GBL adoption intention

2.3 Conceptual Framework

This section presents the conceptual framework that forms the basis of this study, offering a clear guide for how the research objectives will be accomplished. Focusing on students' attitudes and students' motivation, this research framework aims to clarify how these factors affect the GBL adoption intention among students. Through this structured approach, the study seeks to offer insights into the design of learning materials via gamification, particularly in light of the increasing penetration of games in the Malaysian market and the preferences of younger generations (Ibrahim et al., 2011).

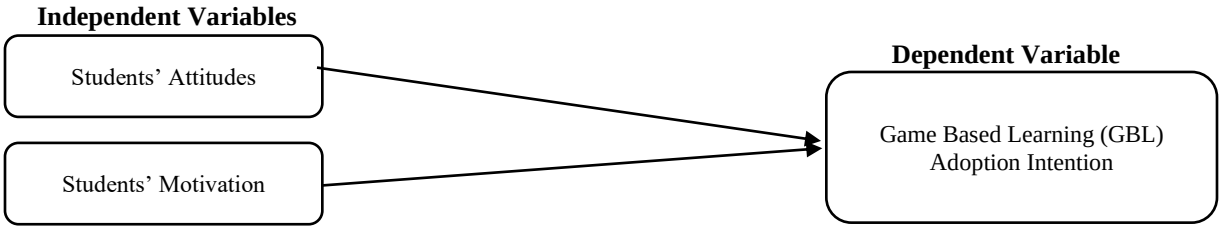

Figure 1: Conceptual Framework

3.0 Research Methodology

The research gathered data via a questionnaire which distributed to 189 students from undergraduate students taking the accounting subject from Universiti Teknologi MARA, Perak Branch. There are two sections in the questionnaire; Section A focused on the demographic of the respondents while Section B asked students about three constructs; students' attitudes, students' motivation and game-based learning adoption intention. All these constructs were adapted and modified from Ibrahim, Yusoff, Mohamed-Omar & Jaafar, (2011) and Masroom (2006). The four-point Likert scale was operationalized to estimate all the measures (1 = strongly disagree, 4 = strongly agree). This four-point Likert Scale was adopted as it is ideally a good scale for market researchers, in which to get the specific responses. Quantitative approaches were performed to analyze the data.

4.0 Results and Discussion

4.1 Demographic of respondents

Based on Table 1, the demographic characteristics of the respondents in the study indicate a diverse yet predominantly female sample. Out of 189 participants, 72% are female (136 respondents), while 28% are male (53 respondents). The age distribution is heavily skewed towards the 20-29 years old category, which accounts for 94.2% of the respondents (178 individuals). This is in line with the targeted respondents among undergraduate students in a local university. In terms of academic performance, as measured by Cumulative Grade Point Average (CGPA), a significant majority (64.6%) of the respondents have a CGPA of 3.50 and above. This is followed by 28% with a CGPA between 3.00-3.49, 6.3% between 2.50-2.99, and 1.1% between 2.00-2.49. Notably, no respondents have a CGPA below 2.00. This data suggests a high academic performance within the sample, with most respondents maintaining strong GPAs.

Table 1. Demographic Characteristics of Respondents

Characteristics	Items	Frequency	%
Gender	Male	53	28%
	Female	136	72%
Age	Under 20 years old	10	5.3%
	20-29 years old	178	94.2%
	30-39 years old	1	0.5%
	Above 40 years old	0	0%
Academic Performance (CGPA)	3.50 and above	122	64.6%
	3.00-3.49	53	28%
	2.50-2.99	12	6.3%
	2.00-2.49	2	1.1%
	Less than 2.00	0	0%

4.2 Assessment of the Measurement Model

The data from the questionnaire was analyzed using Smart PLS (Partial Least Square), a two-step approach which involves evaluating both the measurement and structural models. The measurement model examines the relationship between items and constructs, while the structural model explores the relationship between exogenous and endogenous constructs in the research model. Figure 2 shows the measurement model, which must meet the criteria for internal consistency reliability, convergent validity and discriminant validity. Internal consistency reliability is to ensure the consistency of results across items, while convergent validity is tested to ensure that multiple items measuring the same concept agree with each other. To assess the internal consistency reliability and convergent validity of the measurement model, the loadings, composite reliability (CR), and average variance explained (AVE) were evaluated. Hair et al. (2017) recommend that the loading, AVE, and CR values should be at least 0.6, 0.5, and 0.7, respectively, to establish convergent validity. Table 2 demonstrates that the reliability and convergent validity of the construct was satisfactory as the loading, AVE, and CR values exceeded the recommended values. The loading varied from 0.656 to 0.923, AVE ranged from 0.569 to 0.649, and CR ranged from 0.809 to 0.845, indicating that convergent validity was achieved.

Table 2. The Measurement Model Assessment

Constructs	Measurement items	Loadings	Cronbach's α	CR	AVE
Game Adoption Intention	INT1 INT2 INT3 INT4	0.7 0.768 0.759 0.788	0.749	0.841	0.569
Student Attitude	SA1 SA2 SA3	0.656 0.815 0.923	0.753	0.845	0.649
Student Motivation	SM1 SM2 SM3	0.806 0.794 0.693	0.653	0.809	0.587

Fornell and Larcker's method was used to evaluate discriminant validity by determining whether all the constructs were free from unidimensionality. Table 3 shows that the square value of AVE was greater than the correlation between the constructs, indicating that the model met the recommended requirements, and discriminant validity was confirmed for all the constructs in the study.

Table 3. Discriminant Validity of Measurement Model Using Fornell and Larcker

Constructs	Game Adoption Intention	Students' Attitude	Students' Motivation
Game Adoption Intention	0.754		
Students' Attitude	0.335	0.806	
Students' Motivation	0.6	0.358	0.766

4.3 Assessment of the Structural Model

A structural model analysis was conducted to test the two hypotheses. In the assessment of the structural model, the direction of the beta value, the significance level of the t-values and p-value were examined, as suggested by Hair et al. (2017). A bootstrapping procedure with resampling of 5,000 was performed to test the direct effect. Figure 2 depicts the structural model of this study. Table 4 provides the results of

hypotheses testing. Specifically, in *H1* it was hypothesized that students' attitude would have a positive influence on GBL adoption intention. The results showed positive but insignificant relationship (β= 0.138, t = 1.248, p >0.05). Therefore, *H1* was not supported. Finally, regarding H2, in which it was hypothesized that students' motivation would have positive impact on intention to adopt GBL, the results showed that students' motivation had a positive influence on the dependent variable (β= 0.55, t = 5.615, p < 0.01), and thus *H2* was supported.

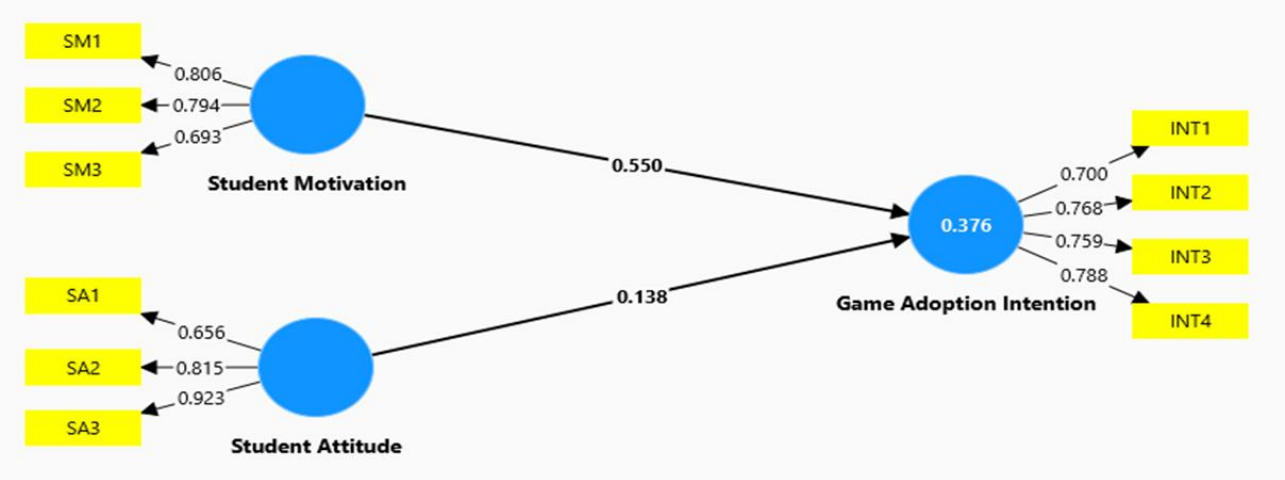

Figure 2. Structural Model

Table 4. Structural Model Assessment and Hypothesis Testing

Hypothesis	Relationship	Beta	Std Deviation	t value	p value	Decision
H1	Student Attitude -> Game Adoption Intention	0.138	0.111	1.248	0.212	Rejected
H2	Student Motivation -> Game Adoption Intention	0.55	0.098	5.615	0.000	Supported

Table 5 presents the values of the coefficient of determination (R^2) and effect size (f^2) of the exogenous variables on the endogenous variable. The R^2 value represents the amount of variance in the endogenous construct explained by all the exogenous constructs in the research model. As can be seen from the table, the R^2 was 0.376, which denoted that the exogenous variables (students' attitude and students' motivation) explained 37.6% of the variance in the endogenous variable (game adoption intention).

As regards the effect size, f^2, this represents the value of R^2 that is changed when a specific construct is omitted from the model. Following Cohen (1988), the impact of the effect size was judged to be small if the value of f^2, was 0.02, medium if it was 0.15 and large if it was 0.35. The results in Table 5 indicate that the supported exogenous variables (student attitude), f^2, = 0.027 and (student motivation), f^2, = 0.423 had a small and large effect size, respectively on the endogenous variable (game adoption intention).

Table 5. Result of R^2 and f^2

Construct	R^2	f^2	Decision
Game Adoption Intention	0.376		
Student Attitude		0.027	Small
Student Motivation		0.423	Large

5. Conclusion

This research paper delves into relationship between students' attitudes and motivation toward the intention to adopt Game-Based Learning (GBL). The findings indicate that while students' motivation significantly influences their intention to adopt GBL, students' attitudes do not have a significant impact. This study highlights the importance of motivation in driving GBL intention, justifying the importance of both intrinsic and extrinsic motivations in driving users' behavioral intentions. These findings add to previous research on adoption determinants related to digital games in formal education. The use of digital tools, including gaming, can complement traditional activities, encourage physical activity among children, and enhance their learning experiences.

Overall, the results contribute to the existing literature by highlighting the importance of game-based student response systems in education. Future research could further investigate educators' attitudes and motivations toward digital games and GBL, which could inform the selection and utilization of appropriate technologies to boost student engagement in the learning process. Although integrating games into the curriculum proves effective, it is essential to tailor such implementations to address the diverse learning attitudes and behaviors of students. Another limitation of this study is the limited number of constructs tested to determine their relationship with the intention to adopt GBL. Future research could build on this study by investigating additional variables that could be controlled, mediated, or moderated.

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Sekian, terima kasih.

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