Determinants of Intention to Play Mobile Games in Thailand

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Abstract

Mobile Game industry in Thailand has been grown significantly in recent year. Since Thai people welcomely embrace mobile games, it becomes the most grossing entertainment platform. However, what makes Thai people decide to play mobile games is still questioned. Therefore, this study aims to investigate on determinants of intention to play mobile games in Thailand. The study was conducted by means of quantitative method through online questionnaire. Total of relevant 405 responses were gathered and analyzed with Structural Equation Modeling, using AMOS 24. Theory of planned behavior and extended Technology acceptance model were integrated in the conceptual framework. The findings show that Intention to play mobile game were determined around 64.8 per cent by Attitude, Perceived Behavioral Control and Perceived Enjoyment.

Keywords: Mobile games, Theory of planned behavior, Technology acceptance model

Introduction

As the mobile phone becomes one of the most important devices for human, entertainment content such as streaming media and video services, mobile TV and games are greatly welcome. However, game is one of the most grossing entertainment contents. When it comes to mobile gaming in Thailand, a significant growth of the industry can be clearly seen, thanks to the advancement of technology such as better internet and smartphone. Number of Thai people who play mobile games has increased in recent years. In 2020, there are around 19.7 million out of 69.3 million of Thai who play mobile games (PeerPower, 2020). The industry generates $258 million in 2020, which is twice as much of $127 million in 2017 (Statista).

However, why Thai people intentionally decide to play mobile games is still questioned. Although the environment is favorable for mobile games, there is no empirical evidence to explain mobile games acceptance nor their intention to play mobile game. Due

to the problem relates to their determinations and actions, theories relating to behavior will be best fit for this research. Especially, the Theory of Planned Behavior (TPB) which is a psychological theory used to predict an individual's behavioral intentions (Ajzen, 1991). The theory includes three components which are Attitude, Subjective Norm and Perceived Behavioral Control. These components will be used to determine Intention to play mobile game. Another theory applied in this study is Technology Acceptance Model (TAM). This model explains how user comes to accept technology (Davis, 1989). It posits two factors that determine acceptance which are perceived ease of use and perceived usefulness. However, TAM in this study is constructed for entertainment-oriented technology, mobile games, which the main purpose of playing games is just for pleasure, not achieving specific goals nor improving performance. Therefore, Perceived Usefulness is replaced with Perceived Enjoyment.

Research objective

To investigate the determinants of Intention to Play Mobile Games in Thailand

Research scope

1. The study was scoped to investigate Thai who is over 18 years old and currently playing mobile games. A sample of 405 Thai players was drawn by convenience sampling method, calculated by Taro Yamane formula.

2. The variables in this study derived from Theory of Planned Behavior (Ajzen, 1991) and Technology Acceptance Model (Davis, 1989). However, Technology Acceptance Model in this study is constructed for entertainment-oriented technology. Therefore, some researchers such as Hsu and Lu (2004) and Lee and Tsai (2010) decide to replace the existing variable, Perceived Usefulness, with Perceived Enjoyment. As a result, there are six variables in this study, Intention to Play Mobile Games, Attitude, Subjective Norm, Perceived Behavioral Control, Perceived Ease of Use and Perceived Enjoyment.

3. The online survey was conducted via mobile game community on Facebook during 14th July 2021 – 20th July 2021.

Research Methodology

1. Research Methodology

The goal of this research is to answer what are the determinants of intention to play mobile games of adults in Thailand. Therefore, quantitative research was conducted.

2. Research Process

The background of the problem was firstly determined as well as the research objectives. Then, the conceptual framework was developed based on related theories.

The online questionnaire was conducted including two sections which are demographic profile of respondent and their intention to play mobile games. The constructs measured in this study were developed from Theory of Planned Behavior and Technology Acceptance Model. Regarding the intention to play mobile games, it includes 6 constructs with 3 items each. The item is measured on A 5-point Likert scale with the end points of "strongly agree (5)" and "strongly disagree (1)". The collected data was measured internal consistency by means of Cronbach's alpha. Then, the proposed casual connections were examined.

The analysis started with evaluating the goodness of fit in Confirmatory factor analysis (CFA). Basically, the chi-square (χ^2) fitness test is regarded as one of the best tests; however, it was not suitable for this research due to large sample size. Therefore, other indices such as absolute fit and incremental fit were used instead. Then, reliability and validity of the constructs were calculated. The Composite Reliability (CR) is calculated to explain Construct Reliability, while the Average Variance Extracted (AVE) explain Convergent Validity and Discriminant Validity. Next, the path diagram was established and the maximum likelihood estimation was used. The goodness of fit was evaluated again. If some indices in the goodness of fit was unacceptable, some modification would be made. Factor loading was the first to be considered. The items with factor loading higher than 0.6 were suitable to use, whereas items with low factor loadings were deleted. If some indices in the goodness of fit was still unacceptable, modification indices played an important role to improve the fit. Lastly, the hypotheses would be examined.

3. Data Collection

In order to collect the empirical data, an online survey among Thai was conducted. The link of questionnaire was posted on Facebook mobile gaming communities. Only respondent who is over 18 years old and currently playing mobile games is qualified to response the questionnaire.

4. Data analysis

The SPSS Statistics 25 was used to measure internal consistency of each construct by means of Cronbach's alpha. Then, the software package AMOS 24.0 was used to examine the proposed casual connections. The confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) were also used in the analysis.

Research Finding

Questionnaire

The reliability of each construct was examined by measuring Cronbach's alpha. It is generally accepted that the threshold of Cronbach's alpha coefficient is greater than 0.7. Based on the results, Cronbach's alpha of all constructs shows high level of internal consistency. The result of each construct is shown below.

Table 1: Questionnaire items and Cronbach's alpha

Constructs	Cronbach's alpha
Intention to Play Mobile Games	0.871
Attitude	0.762
Subjective Norm	0.822
Perceived Behavioral Control (PBC)	0.737
Perceived Enjoyment (PE)	0.814
Perceived Ease of Use (PEOU)	0.765

The Measurement Model

The analysis begun with Confirmatory Factor Analysis (CFA). After it was initially analyzed, covariance among error terms were established in order to improve the model fit. The CFA model is shown in Figure 1.

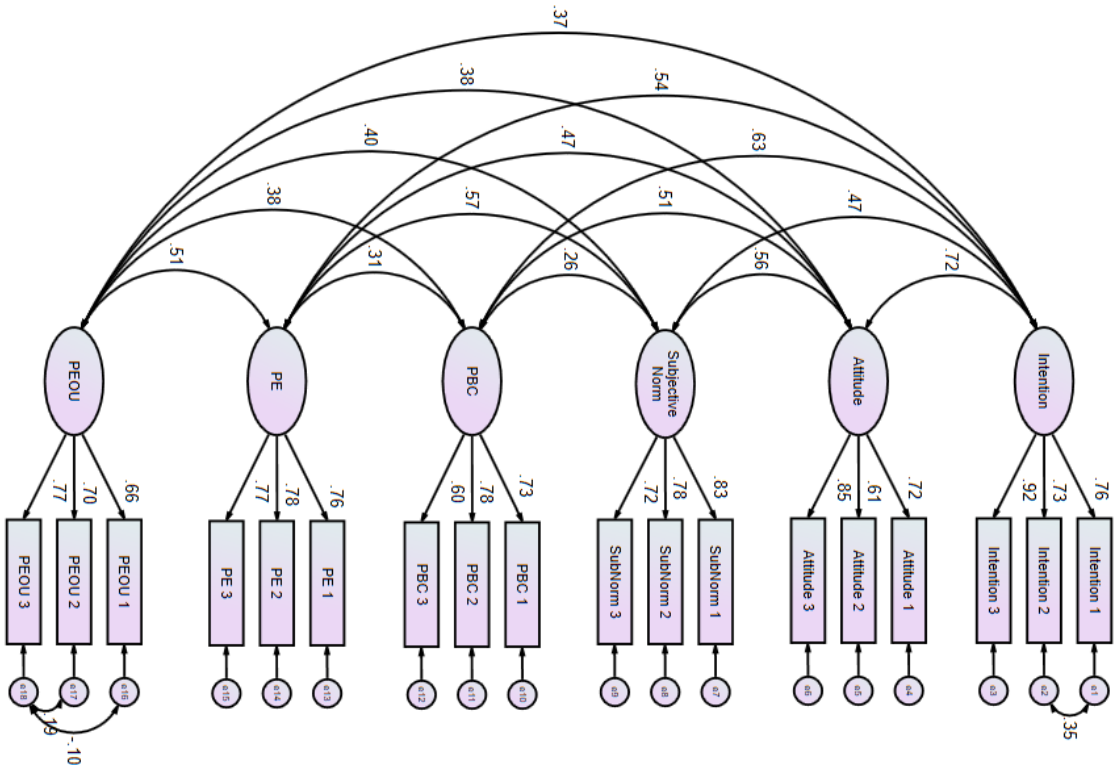

Figure 1 The CFA Model

The results of goodness of fit are shown in Table 2. All indices indicate good fit statistic.

Table 2: The results of goodness of fit

Name of Category	Name of Index	Level of Acceptance	Results	Remarks
1. Absolute Fit	Chi-Square	P-value > 0.05 *Not Applicable for large sample size (>200)	Not Applicable	Not Applicable
	RMSEA	RMSEA < 0.08	0.042	Acceptable
	GFI	GFI > 0.90	0.948	Acceptable
2. Incremental fit	AGFI	AGFI > 0.90	0.924	Acceptable
	CFI	CFI > 0.90	0.974	Acceptable
	TLI	TLI > 0.90	0.966	Acceptable
	NFI	NFI > 0.90	0.939	Acceptable
3. Parsimonious fit	χ^2/< d.f. ratio	χ^2/< d.f. ratio < 3.0	1.697	Acceptable

Then, the convergent validity is assessed by loading of all items; Composite Reliability (CR), Average Extracted Variance (AVE) and Discriminant Validity are evaluated by examining whether the square root of AVE are higher than the intercorrelations of constructs.

As shown in Table 3, The Composite Reliability (CR) exceed 0.70 which establishes Construct Reliability. The Average Variance Extracted (AVE) exceed 0.50 on all constructs, providing evidence for the convergent validity of the constructs. In addition, the square root of AVE (shown as bold at diagonal) exceeds all intercorrelations of each construct, indicating high Discriminant Validity.

Table 3: Construct Reliability, Convergent Validity and Discriminant Validity

Construct	CR	AVE	Intention	Attitude	Sub_Norm	PBC	PE	PEOU
Intention	0.848	0.653	**0.808**					
Attitude	0.775	0.539	0.721	**0.734**				
Sub_Norm	0.820	0.604	0.47	0.558	**0.777**			
PBC	0.748	0.501	0.63	0.507	0.258	**0.708**		
PE	0.815	0.595	0.541	0.468	0.57	0.312	**0.771**	
PEOU	0.756	0.510	0.37	0.375	0.395	0.383	0.508	**0.714**

The Structure Equation Model

The analysis of Structure Equation Model (SEM) was the next step after CFA model. Same as the previous analysis, goodness of fit of the model would be evaluated. The model is shown in Figure 2.

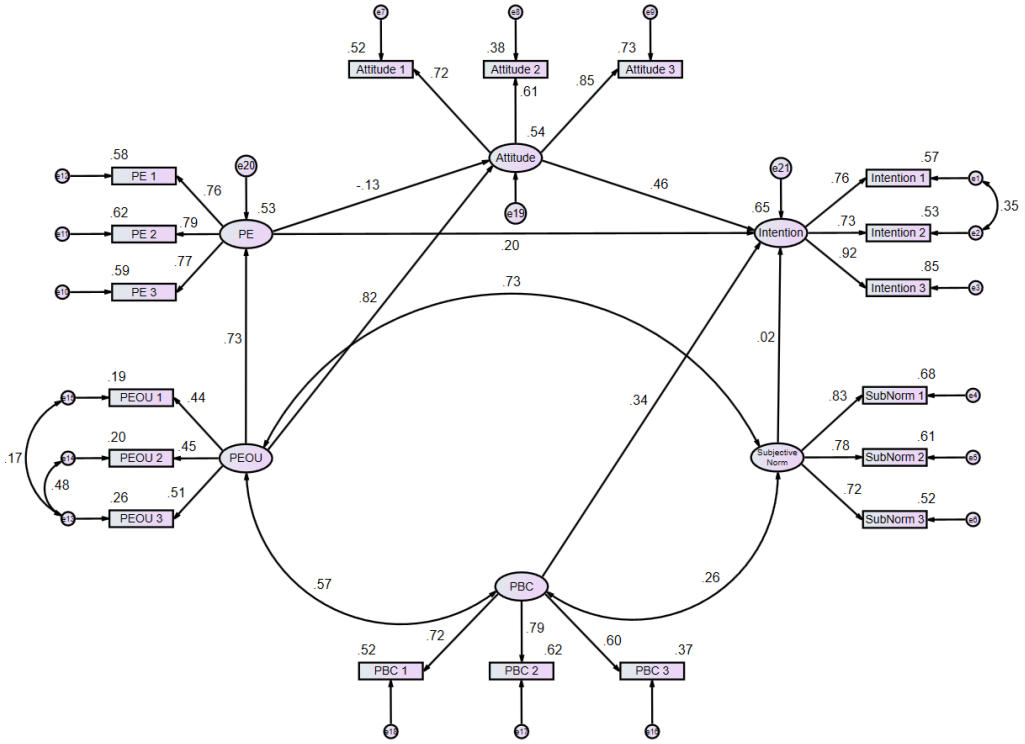

Figure 2 The Structure Equation Model

The results of goodness of fit for this model are shown in Table 4. The overall fit statistic indicates a good level of fit.

Table 4: The results of goodness of fit

Name of Category	Name of Index	Level of Acceptance	Results	Remarks
1. Absolute Fit	Chi-Square	P-value > 0.05 *Not Applicable for large sample size (>200)	Not Applicable	Not Applicable
	RMSEA	RMSEA < 0.08	0.056	Acceptable
	GFI	GFI > 0.90	0.930	Acceptable
2. Incremental fit	AGFI	AGFI > 0.90	0.901	Acceptable
	CFI	CFI > 0.90	0.952	Acceptable
	TLI	TLI > 0.90	0.940	Acceptable
	NFI	NFI > 0.90	0.917	Acceptable
3. Parsimonious fit	χ^2/< d.f. ratio	χ^2/< d.f. ratio < 3.0	2.227	Acceptable

Hypothesis Testing

According to the results, p-values of H_1, H_3, H_4, H_6 and H_7 are less than 0.001, which are statistically significant. Thus, these 5 hypotheses are supported. However, the p-values of H2 and H5 are 0.733 and 0.311 consecutively, indicating non-significant statistic. Therefore, H_2 and H5 are not supported.

Table 5: Results of Hypothesis Test

Hypothesis	Effect	Coefficients	S.E.	P	Remarks
H_1	Intention ← Attitude	0.457	0.073	***	Support
H_2	Intention ← Sub_Norm	0.020	0.041	0.733	Not Support
H_3	Intention ← PBC	0.337	0.078	***	Support
H_4	Intention ← PE	0.199	0.060	***	Support
H_5	Attitude ← PE	-0.130	0.119	0.311	Not Support
H_6	Attitude ← PEOU	0.824	0.280	***	Support
H_7	PE ← PEOU	0.727	0.188	***	Support

Note: ***p < 0.001

The integrated model is shown in Figure 3, the combination of Attitude, Subjective Norm, Perceived Behavioral Control and Perceived Enjoyment explain 64.8% of the variance in intention to play mobile games. The 54% of the variance in Attitude was explained by Perceived Enjoyment and Perceived Ease of Use, while 52.9% of the variance in Perceived Enjoyment was explained by Perceived Ease of Use.

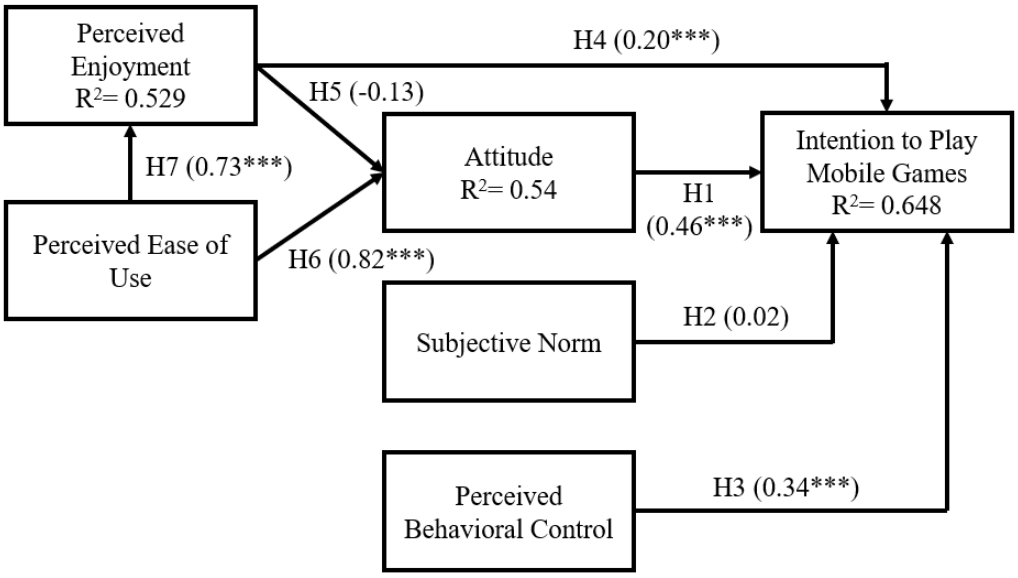

Figure 3 Summary of Hypothesis tests; ***p < 0.001

Discussion and Conclusion

The purpose of this study was to investigate the determinants of Intention to Play Mobile Games of Thai adults with TPB and TAM. The finding verifies the effect of Attitude, Perceived Behavioral Control and Perceived Enjoyment on Intention to Play Mobile Games.

The results shows that H_1 and H_3 are supported, which means Attitude and Perceived Behavioral Control significantly determine Intention to Play Mobile Games. The relevant studies regarding TPB on online games also show that Attitude and Perceived Behavioral Control determine Intention (Lee & Tsai, 2010). However, H_2 is not supported, indicating that Intention to Play Mobile Games is not driven by Subjective Norm. Some previous studies regarding mobile games also have no relationship between Subjective Norm and Intention such as Liang and Yeh (2011) and Gao, et al.'s (2014). For an assumption to explain this issue, playing mobile game is a self-reliant activity. Basically, it is just a leisure activity performed by oneself, depending on one's interest. The expectation and belief from people cannot pressure toward mobile game player. Thus, there is no relationship between Subjective Norm and Intention to Play Mobile Games.

In the area of Technology Acceptance Model (TAM), H_4 is supported which means Perceived Enjoyment affects Intention to Play Mobile Game. Nguyen (2015) and Lumphetmongkol (2016) who conduct the study on mobile games also have the same result. However, H5 is not supported, showing that Perceived Enjoyment does not affect Attitude. There is a conflict between this finding and previous study on adoption of mobile games by

Ha, et al.'s (2007), whose finding proves the positive relationship between Perceived Enjoyment and Attitude. According to the result, it can be assumed that Thai people do realize an enjoyment from playing mobile game regardless attitude toward it. Lastly, The verified H_6 and H_7 indicate that Perceived Ease of Use has a significant positive impact on both Perceived Enjoyment and Attitude. The study by Park, et al.'s (2014) also verifies this relationship.

In addition, the study reveals that Intention to Play Mobile Games can be predicted with TPB and TAM. Around 64.8% of the variance of Intention to Play Mobile Games is explained by Attitude, Perceived Behavioral Control and Perceived Enjoyment.

Suggestions

This Study revealed the determinants of Intention to Play Mobile Games of Thai adults. Thus, the following recommendations are hereby presented:

Suggestion for the future research

1. Although Subjective Norm does not determine Intention to Play Mobile Games in this study, it does not mean that researcher should omit this variable. Most of previous studies have shown that Subjective Norm is a good predictor in the model.

2. The integration of TAM into entertainment-based technology still needs more investigation, especially when adapt Perceived Enjoyment into the model.

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