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An Investigation of the Adoption of Online Game Technologies in Indonesia

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ABSTRACT

This study examines influences on an individual's intentions to use online game technologies. Data was collected by the questionnaire from a sample of 895 individuals of age 12 – 26 years in Indonesia. A theoretical model extending the Unified Theory of Acceptance and Use of Technology included causal effects on intentions as well as moderating effects due to the individual's gender, age, and experience. The model was analyzed using structural equation modeling techniques and the results confirmed several findings from previous studies respected especially with the positive effects of enjoyment, ease of use, and the availability of infrastructure on the individual's intentions. New findings showed that gender, age, and experience moderated the effects on the individual's intention due to social influences, feelings of involvement, and perceptions of personal attainments, respectively. Moreover, new findings emerged for differences and similarities in the significant effects in the theoretical model among the groups defined within the scales of gender, age, and experience.

KEYWORDS

Indonesia, Moderating Effect, Online Game, Technology Adoption, UTAUT Model

INTRODUCTION

The adoption of online game technologies is an important issue for governments, users, developers, parents, teachers, and those who are concerned about the economic, social, and personal implications of the use of online games. In Indonesia, in line with the increased availability and use of technologies such as smartphones and tablets, the use of online games has continued to increase especially among younger individuals. Based on BPS-Statistics Indonesia (2014) there are approximately 59 million individuals in Indonesia in the age range 12-26 years. In 2014, approximately 82 percent of online game players were less than 24 years of age and 10 percent were of age 25-34 years (Baskoro, 2015). Although, the adoption of online game technologies in Indonesia has been extensive, there has been very limited research conducted on this topic (Rakhmani, Darmawan & Iwatani, 2015) and this study addresses that issue.

Many studies of online gaming systems have proposed theoretical models derived from the Technology Adoption Model (TAM) (Davis, 1989; Davis, Bagozzi, & Warshaw, 1992), the Theory of Planned Behavior (TPB) (Ajzen, 1991), combinations of TAM and TPB, or to a lesser extent the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, G. Davis, & F. Davis, 2003). This study proposes a theoretical model which is closely related to the UTAUT model. It includes two additional variables (Perceived Enjoyment and Flow Experience) which were found to be important in several previous studies based on TAM, TPB, or combinations of TAM and TPB. One of the attractive features of the UTAUT is that it is one of only a few models that include moderating effects. Notably, there have not been any published studies on the adoption of online gaming technologies in Indonesia based on the UTAUT mod

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The purpose of the study is to examine factors that influence an individual's intention to adopt online gaming technologies. In order to achieve this purpose a sequence four specific and related research questions are addressed: (a) Which factors have an influence on an individual's intention to adopt online gaming technologies? (b) What are the relationships among these factors? (c) Which relationships represent significant causal effects and which represent significant moderation effects? (d) What are the theoretical and practical implications of the answers to the preceding three questions? The outcomes of the study are expected to contribute to a theoretical understanding of the adoption of online gaming technologies and to provide practical guidance for those who have interests in online games.

Against this background, the article begins with a review of related literature and the formulation of a theoretical model. This is followed by a description of the research design and methodology used in the study. The next section presents the results of the data analyses and this is followed by a discussion of the findings of the study based on the results of the data analyses. The final section presents conclusions practical implications of the findings and a discussion of the limitations of the study and possible further related studies.

RELATED LITERATURE AND THEORETICAL MODEL

The purpose of this review is to identify important variables and their causal or moderating effects on an individual's intention to use online gaming technology. The focus is on recent studies that used quantitative methods and empirical data to evaluate theoretical causal models. Based on the findings of previous studies, a theoretical model is developed with associated research hypotheses.

Overview of Previous Studies

Table 1 summarizes the characteristics of previous related studies of the adoption of online gaming technologies. The studies are presented in two groups: studies of Behavioral Intention/Motivation in the context of online gaming; and studies of Behavioral Intention in the more general context of technology adoption.

From Table 1 it is seen that almost all of the studies of behavioral intention in the context of online gaming or technology adoption propose a theoretical model with hypotheses that are tested using quantitative data collected using a questionnaire. TAM, TPB, and models combining TAM and TPB are used extensively. However, there are a limited number of studies that investigate moderating effects and very few are based on UTAUT and in particular none of these have been conducted in Indonesia.

Model Variables

The review of previous studies summarized in Table 1 revealed that the variables presented in Table 2 have been asserted to be involved consistently in studies of the adoption of online gaming technologies. Operational definitions are given in Table 2 with references to the source of the definition.

The following discussion is concerned with variables in Table 2 that have been shown in previous studies to have either important direct causal effects on Behavioral Intention or moderating effects on these causal effects.

Performance Expectancy (Perceived Usefulness) and Effort Expectancy (Perceived Ease of Use)

In the original TAM model the variables Perceived Usefulness and Perceived Ease of Use had important effects on Attitude. Studies by Hsu & Lu (2004) and Lee (2009) showed that the direct effect of Perceived Usefulness on Intention was not significant. However, when Attitude was removed from the model in the study by Ea et al. (2012) Perceived Usefulness and Perceived Ease of Use had significant effects on Intention. In addition, Attitude has a significant effect on Intention

Table 1. Previous studies of Behavioral Intention (BI) in the context of online gaming and technology adoption

Model/Theory	Causal Effects on Behavioral Intention	Moderating Effects	Data Collection	Reference
Studies in the Context of Online Gaming				
An extended TAM	Flow Experience, Social Norms, Attitude	None	Quantitative Web survey	Hsu & Lu (2004)
Antecedents of the appeal of online games	Perceived Entertainment, Perceived Ease of Use	None	Quantitative survey	Gao (2004)
The relationship between age, gender, usage pattern, and motivation to play	Age, Gender, Usage Pattern	None	Quantitative online survey	Yee (2006)
Gender differences in the adoption of online gaming technology	Gender, Perceived Playfulness, Self-efficacy, Computer Anxiety	**Gender** as moderator of the effect of Self-efficacy and Computer Anxiety on BI	Quantitative survey	Wang & Wang (2008)
Testing two competing models based on TPB and TAM	Flow Experience, Perceived Enjoyment, Attitude, Subjective Norms, Perceived Behavioral Control	**Gender** as moderator of the effect of Perceived Enjoyment and Attitude on BI and Human-Computer Interaction on Flow Experience. **Experience** as moderator of the effect of Perceived Behavioral Control on BI	Quantitative Web survey	Lee (2009)
Experiential motives and social affiliation as predictors of behavioral intention	Enjoyment, Escape, Social Affiliation	None	Quantitative online survey	Koo (2009)
The UTAUT model in playing online game through mobile phones.	Attitude	**Experience** as moderator of the effect of Attitude on BI	Quantitative online survey	Chen, Kuan, Lee, & Huang (2011)
An extended TPB	Flow Experience, Subjective Norm, Attitude	None	Quantitative survey	Chaitaneeyachat (2012)
Combine of TAM and TPB	Flow, Subjective Norm, Perceived Usefulness, Perceived Ease of Use	None	Quantitative survey	Fan, Ghu, Suh, & Lee (2012)
Identifying the factors that influence people to play online social games	Enjoyment, Interaction with others, Perceived number of users, Time flexibility	None	Quantitative Web survey	Wei & Lu (2014)
Studies in the Context of Technology Adoption				
The UTAUT model	Performance Expectancy, Effort Expectancy, Social Influence	**Age** as moderator of the effect of Performance Expectancy, Effort Expectancy, and Social Influence on BI. **Gender** as moderator of the effect of Performance Expectancy, Effort Expectancy, and Social Influence on BI. **Experience** as moderator of the effect of Effort Expectancy and Social Influence on BI	Quantitative survey	Venkatesh et al. (2003)
Moderating effects of gender on behavioral intention to use mobile chat services	Perceived Expressiveness, Perceived Enjoyment, Perceived Usefulness, Normative Pressure, Attitudes	**Gender** as moderator of the effect of Perceived Expressiveness, Perceived Enjoyment, Perceived Usefulness, and Normative Pressure on BI	Quantitative survey	Nysveen, Pedersen, & Thorbjørnsen (2005)
Prior experience and age on mature consumers' perceptions and intentions of internet apparel shopping	Perceived Risk (partially), Perceived Benefits (partially)	**Age** as moderator of the effect of Perceived Benefits (partially) on BI	Quantitative mail survey	Kwon & Noh (2010)
Moderating online shopping behavior by age, gender, and income	Attitudes, Current Behavior	**Gender** as moderator of the effect of Attitude on BI	Quantitative survey	Hernández, Jiménez, & Martín (2011)
Extending UTAUT model	Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Hedonic Motivation, Price Value, Habit	**Age** as moderator of the effect of Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Hedonic Motivation, Price Value, and Habit on BI. **Gender** as moderator of the effect of Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Hedonic Motivation, Price Value, and Habit on BI. **Experience** as moderator of the effect of Effort Expectancy, Social Influence, Hedonic Motivation, and Habit on BI.	Quantitative online survey	Venkatesh, Thong, & Xu (2012)

Table 2. Operational definitions of important variables

Variables	Operational Definition	Reference
Behavioral Intention	The extent to which the user intends to play online games in the future.	Hsu & Lu (2004)
Flow Experience	The extent to which an individual feels that they act with total involvement.	Lee (2009)
Perceived Enjoyment	The extent to which an individual perceives that playing online games is enjoyable.	Chaitaneeyachat (2012)
Performance Expectancy	The degree to which an individual believes that using the system will help them to attain personal gains.	Venkatesh et al. (2003)
Effort Expectancy	The degree of ease associated with the use of the system.	Venkatesh et al. (2003)
Social Influence	The degree to which an individual perceives that important others believe that they should use the system.	Venkatesh et al. (2003)
Facilitating Conditions	The degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system.	Venkatesh et al. (2003)
Gender	The individual's gender measured as male or female.	Nil
Experience	The number of months of experience the individual has in using the system.	Venkatesh et al. (2012)
Age	The individual's age in years.	Nil

when Perceived Usefulness and Perceived Ease of Use were both involved in the model (Lee, 2009; Chaitaneeyachat, 2012). These findings are in accordance with Venkatesh et al. (2003) which stated that "the attitudinal constructs are significant only when constructs related to performance and effort expectancies are not included in the model" (p. 455).

Flow Experience and Perceived Enjoyment

In online gaming studies based on the TAM, TPB, and combinations of the TAM and TPB, there are two variables (Flow Experience and Perceived Enjoyment) that have significant effects on Behavioral Intention (Hsu & Lu, 2004; Gao, 2004; Wang & Wang, 2008; Lee, 2009; Koo, 2009; Chaitaneeyachat, 2012; Fan et al., 2012; Wei & Lu, 2014). The study by Nysveen et al. (2005) of behavioral intentions related to mobile chat services also produced the same finding.

Facilitating Conditions

Facilitating Conditions or Perceived Behavioral Control (Lee, 2009) has been shown to have a significant effect on Behavioral Intention to play online games.

Social Influence

Social Influence has a significant effect on Behavioral Intention to play online games (Hsu & Lu, 2004; Lee, 2009; Chaitaneeyachat, 2012; Fan et al., 2012). Social Influence has been described by several equivalent constructs in studies of behavioral intention to play online games such as: Social Norms (Hsu & Lu, 2004), Subjective Norm (Lee, 2009; Chaitaneeyachat, 2012; Fan et al., 2012), and Social Affiliation (Koo, 2009).

Moderating Effects of Gender, Age, and Experience

Table 3 summarizes the findings in previous studies concerned with the moderating effects of Gender, Age, and Experience on the direct causal effects on Behavioral Intention due to the six important variables discussed in this study.

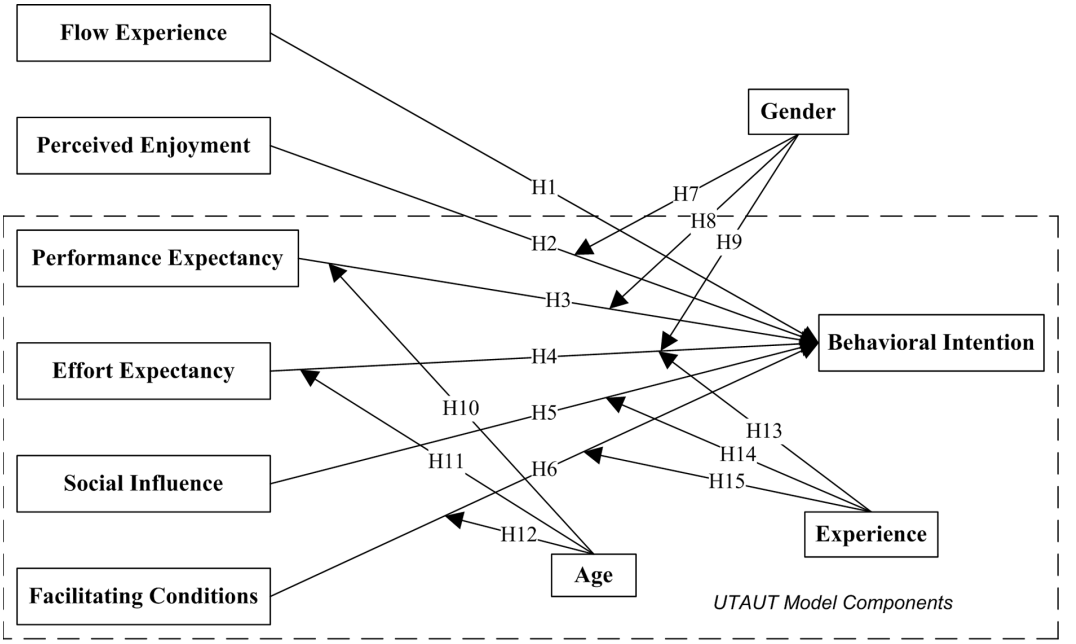
Table 3. Summary of moderating effects of Gender, Age, and Experience

Causal Effects on Behavioral Intention	Moderating Effects	Reference	Context of the Study
Gender			
Perceived Enjoyment	Stronger effect for males than for females	Lee (2009)	Online gaming
	Stronger effect for females than for males	Nysveen et al. (2005)	Mobile chat services
	Gender was not a significant moderator	Wang & Wang (2008)	Online gaming
Performance Expectancy	Stronger effect for males than for females.	Nysveen et al. (2005)	Mobile chat services
	Stronger effect for males than for females.	Venkatesh et al. (2003)	Technology acceptance
Effort Expectancy	Stronger effect for females than for males	Venkatesh et al. (2003)	Technology acceptance
Social Influence	No significant moderating effect	Lee (2009)	Online gaming
Flow Experience	No significant moderating effect	Lee (2009)	Online gaming
Facilitating Conditions	No significant moderating effect	Lee (2009)	Online gaming
Age			
Performance Expectancy	Stronger effect in younger people than in older people.	Venkatesh et al. (2003)	Technology acceptance
Effort Expectancy	Stronger effect in older people than in younger people.	Venkatesh et al. (2003)	Technology acceptance
Facilitating Conditions	Stronger effect in older people than in younger people.	Venkatesh et al. (2012)	Acceptance of mobile internet technology
Social Influence	No significant moderating effect	Lee (2009)	Online gaming
Perceived Enjoyment	No significant moderating effect	Lee (2009)	Online gaming
Flow Experience	No significant moderating effect	Lee (2009)	Online gaming
Experience			
Effort Expectancy	Stronger effect for decreased experience compared to increased experience	Venkatesh et al. (2003)	Technology acceptance
Social Influence	Stronger effect for decreased experience compared to increased experience	Venkatesh et al. (2003)	Technology acceptance
Facilitating Conditions	Stronger effect for decreased experience compared to increased experience	Lee (2009)	Online gaming
Perceived Enjoyment	No significant moderating effect	Lee (2009)	Online gaming
Flow Experience	No significant moderating effect	Lee (2009)	Online gaming
Performance Expectancy	No significant moderating effect	Venkatesh et al. (2003)	Technology acceptance

Theoretical Model and Research Hypotheses

The theoretical model shown in Figure 1 was derived from the findings in previous studies discussed above. In particular, the model incorporates the UTAUT model components (Venkatesh et al., 2003,

Figure 1. Theoretical model



Note: Research hypotheses H1 - H15 are stated in Table 5 below.

2012) complemented by the two variables Flow Experience and Perceived Enjoyment.

In the theoretical model there are six exogenous variables without any proposed causes, one dependent variable (Behavioral Intention), and three moderating variables (Gender, Age, and Experience). Table 4 describes the manner in which the latent variables in the theoretical model were measured and includes references to existing measuring instruments that were used to construct the questions associated with the latent variables and indicators in the study questionnaire (the Notated Questionnaire section of the Appendix).

Table 5 specifies the research hypotheses H1 – H15 notated on Figure 1. References identify previous studies that motivated the research hypothesis.

METHOD

A self-administered questionnaire with two sections was used in this study. Section 1 included questions related to the individual's personal characteristics (gender, age, and level of education) and attributes of their online gaming behavior (technologies used to access games, locations where games are played, types of games played, experience with game playing, frequency of game playing, and duration of gaming playing sessions). Section 2 focused on the seven variables in the theoretical model that are involved in direct causal effects (Behavioral Intention, Flow Experience, Perceived Enjoyment, Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions). The questions associated with these variables were obtained from instruments employed in previous studies identified in Table 4 with the expectation that this would enhance the reliability and validity of the measures of these variables. The questionnaire was developed in the English and Indonesian languages. Both versions were scrutinized by a focus group of five Indonesian representatives with both English and Indonesian language skills. Suggested modifications were included in revised versions of the questionnaire and the Indonesian language version was then used in a pilot study with

Table 4. Measurement scales and instruments

Variable	Measurement Scale	Reference for Measuring Instrument
Latent Variable		
Behavioral Intention	3 indicators: BI1, BI2, BI3	Venkatesh et al. (2003)
Flow Experience	3 indicators: FE1, FE1, FE1	Lee (2009)
Perceived Enjoyment	3 indicators: PCE1, PCE2, PCE3	Lee (2009)
Performance Expectancy	3 indicators: PE1, PE2, PE3	Fan et al. (2012)
Effort Expectancy	3 indicators: EE1, EE2, EE3	Venkatesh et al. (2003)
Social Influence	3 indicators: SI1, SI2, SI3	Lee (2003)
Facilitating Conditions	4 indicators: FC1, FC2, FC3, FC4	Venkatesh et al. (2012)
Single Scale Variable		
Gender	Nominal scale with categorical values of Male and Female.	
Experience	The number of months of experience an individual has with playing online games. Measured in ordinal categories and converted to ratio scale using the midpoint of each category.	
Age	A ratio scale measure of the individual's age in years.	

Notes: (a) The labels used for the indicators for latent variables (e.g. BI1, BI2, BI3) are identified in relation to each associated question in the notated questionnaire in Appendix; **(b)** Each of the indicators for the latent variables was measured using a 5-point Likert scale and the values were adopted as interval scale measures.

a sample of 10 participants from the target population. Any necessary changes were made to the final versions of the questionnaire and the final Indonesian language version was used in the full study. A notated English language version of the final questionnaire is included in Appendix.

It was not possible to obtain an adequate sampling frame in order to randomly select the sample. Consequently, in accordance with Neuman (2006) a purposive sampling method was used and this is appropriate in cases where individuals with particular characteristics are required. Sampling was done in stages mainly by making contact with participants through access provided by high schools, colleges, universities, and the researcher's personal contacts. Hard copies of the questionnaire were provided and individuals were invited to complete the questionnaire. An explanation of the purpose of the questionnaire and instructions for its completion was made available.

Questionnaires were returned from 1003 respondents and these were entered into an SPSS worksheet. Thirty questionnaires were removed because of out-of-range values for some variables and 20 were removed because of missing values for some variables. Ten percent of the remaining 953 questionnaires (95) were checked for data entry errors and none were found. Fifty eight questionnaires were eliminated from the sample because they included an outlier measure for at least one of the model variables. Therefore, the final sample size was 895 which satisfied the minimum sample size of 400 for the study with 5 percent precision and 95 percent level of confidence (Israel, 2015). This sample size also ensured the statistical validity of the SEM and other statistical techniques employed in the analysis and development of the theoretical model (Kline, 2005).

Data Analysis

The construct validity of the measures for the latent variables in the theoretical model was examined using Principal Component factor analysis, and the equivalence reliability of the resulting indicators

Table 5. Research hypotheses

Hypothesis	Reference
Direct Effects	
H1: Flow Experience has a significant positive direct effect on Behavioral Intention.	Hsu & Lu (2004), Lee (2009), Chaitaneeyachat (2012), Fan et al. (2012)
H2: Perceived Enjoyment has a significant positive direct effect on Behavioral Intention.	Gao (2004), Lee (2009), Koo (2009), Wei & Lu (2014)
H3: Performance Expectancy has a significant positive direct effect on Behavioral Intention.	Venkatesh et al. (2003), Nysveen et al. (2005), Fan et al. (2012)
H4: Effort Expectancy has a significant positive direct effect on Behavioral Intention.	Venkatesh et al. (2003), Gao (2004), Fan et al. (2012)
H5: Social Influence has a significant positive direct effect on Behavioral Intention.	Venkatesh et al. (2003), Hsu & Lu (2004), Lee (2009), Chaitaneeyachat (2012), Fan et al. (2012)
H6: Facilitating Conditions has a significant positive direct effect on Behavioral Intention.	Lee (2009), Venkatesh et al. (2012)
Moderating Effects	
H7: Gender has a significant moderating effect on the direct effect of perceived enjoyment on behavioral intention.	Lee (2009)
H8: Gender has a significant moderating effect on the direct effect of performance expectancy on behavioral intention.	Venkatesh et al. (2003), Nysveen et al. (2005)
H9: Gender has a significant moderating effect on the direct effect of effort expectancy on behavioral intention.	Venkatesh et al. (2003)
H10: Age has a significant moderating effect on the direct effect of performance expectancy on behavioral intention.	Venkatesh et al. (2003)
H11: Age has a significant moderating effect on the direct effect of effort expectancy on behavioral intention.	Venkatesh et al. (2003)
H12: Age has a significant moderating effect on the direct effect of facilitating conditions on behavioral intention.	Venkatesh et al. (2012)
H13: Experience has a significant moderating effect on the direct effect of effort expectancy on behavioral intention.	Venkatesh et al. (2003)
H14: Experience has a significant moderating effect on the direct effect of social influence on behavioral intention.	Venkatesh et al. (2003)
H15: Experience has a significant moderating effect on the direct effect of facilitating conditions on behavioral intention.	Lee (2009)

Note: "Significant" refers to statistical significance at a level of 0.05 or less.

for the latent variables was examined using Cronbach Alpha Coefficients. The results of the final factor analysis and the associated Cronbach Alpha Coefficients are displayed in Appendix Table 13.

From the factor analysis it was discovered that the indicator FC4 associated with Facilitating Conditions did not load significantly onto any of the latent variables and so it was removed from the set of indicators employed to measure Facilitating Conditions. With this change all of the indicators for the latent variables exhibited satisfactory construct validity with factor loadings of magnitude greater than 0.4 and associated eigenvalues greater than 1 (Straub, Boudreau, & Gefen, 2004). In addition, the equivalence reliability of the indicators for all of the latent variables was found to be acceptable or excellent as shown by the Cronbach Alpha Coefficients in Appendix Table 13.

Analysis of Descriptive Data

From the responses to items in section 1 of the questionnaire it was found that most respondents were males (56 percent). The majority of respondents (73 percent) have completed high school as their highest level of education or they are currently enrolled at high school. The remaining respondents have either completed a bachelor degree or are currently registered for a bachelor degree with only one respondent who has either completed a master degree or is currently registered for a master degree. The mean and median ages of respondents are both around 18 years and the mode is 20 years representing 21 percent of the respondents. Consequently, for the purpose of analyzing the moderating effects of Age in Figure 1 it was decided that it was reasonable to divide the participants into two age groups: (a) 426 of age greater than 18 years (48 percent); and (b) 469 aged 18 years or less (52 percent).

Also, from the responses to questions in section 1 it was found that Clash of Clans and Let's Get Rich were the most popular recently played games. Single and Multiplayer games were almost equally popular and together accounted for 76 percent of the types of games played. Mobile phones/ tablets were the technologies used by the majority of respondent (63 percent) to play games and most gaming was conducted either at the respondent's home or at the homes of friends. Fifty one percent of the respondents are playing online games up to six times each week but quite a number (35 percent) are playing 10 or more times per week. Most playing sessions (64 percent) are for two hours or less but at the other extreme 14 percent of respondents play for five hours or more at each playing session. Forty nine percent of the respondents play for 10 hours or less per week. However, there are many respondents playing for much longer periods of time each week: 16-20 hours (18 percent); and 36-45 hours (11 percent).

For the distribution of the months of experience playing online games the mean was 12 months, the median was 15 months, and the mode was 18 months. The experience level of 17 months divided the respondents into two almost equal sized groups: (a) 432 with 17 months or more of experience (48 percent); and (b) 463 with less than 17 months experience (52 percent). Consequently, for the purpose of analyzing the moderating effects of Experience in Figure 1 it was decided that it was reasonable to divide the participants into these two groups.

Descriptive statistics for the variables and their indicators are shown on Appendix Table 14. For the purpose of descriptive analyses involving the latent variables a single scale measure of each latent variable was determined for each subject by computing the mean of the values that the subject assigned to the valid and reliable measures of the indicators for that latent variable. Notably, it is shown that the magnitude of all of the values of skewness and kurtosis are in the satisfactory limits of 3 and 7, respectively, as specified by Kline (2005) for the valid use of maximum likelihood estimation in the SEM analysis and the theoretical development described in the model analysis section.

T-tests were used to examine the difference between the mean value of a latent model variable and the neutral value of 3 which represented a "no opinion" response on the 5-point Likert scale. The analysis was done for the whole sample and separately for males and females. It was found that for the whole sample the mean value of each latent model variable was significantly different for the neutral value ($p < 0.05$). All of the latent model variables were found to be very important in relation to online gaming except for Performance Expectancy and Social Influence which had mean values significantly below the neutral value. The same pattern of results was observed separately for the female and male respondents except that for the males the mean value of Performance Expectancy was not significantly different from the neutral value.

T-tests were used to examine differences between the mean values of the variables for males and females. It was found that for the four variables Age, Level of Education, Flow Experience, and Social Influence there was no significant difference between the mean value for males and females ($p < 0.05$). For all of the other variables the mean for males was significantly greater than the mean for females ($p < 0.05$).

Appendix Table 15 displays correlation coefficients among the variables used to determine the profile of respondents and variables in the theoretical model. From Appendix Table 15 it is seen that:

A. Not surprisingly there are significant positive correlations ($p < 0.05$) among the variables associated with the individual's frequency and duration of online gaming. Also, for most of these variables high (low) values are associated with high (low) values for Flow Experience, Perceived Enjoyment, Performance Expectancy, Effort Expectancy, Facilitating Conditions, and Behavioral Intention.
B. As expected there are significant positive correlations ($p < 0.05$) among Age, Education, and Experience with online gaming. In particular, age was significantly negatively correlated with Flow Experience, Perceived Enjoyment, and Effort Expectancy.
C. Values of all of the six exogenous variables in the theoretical model are significantly positively correlated ($p < 0.05$) with the values of the dependent variable Behavioral Intention. Most of the six exogenous variables are significantly positively correlated ($p < 0.05$) with each other.

Statistical Analysis of Model

The analysis of the theoretical model presents the results of examining the causal effects in the model and the moderating effects due to the variables Gender, Age, and Experience.

Causal Effects in the Theoretical Model

The theoretical model in Figure 1 was analyzed using AMOS software and the results of this SEM analysis are shown in Figure 2 where the direct causal effects are presented in the following format: (a) The unstandardized effect is shown first and this is followed by the statistical significance of the unstandardized effect using *, **, and *** to express statistical significance at a level of 0.05, 0.01, and 0.001, respectively, and NS indicates not statistically significant at a level of 0.05 or less; and (b) In parentheses, the standardized effect is shown first followed by an interpretation of its magnitude described by Cohen (1988) as Small (S), Medium (M), or Large (L) with magnitudes less than 0.1, 0.1 to less than 0.5, and 0.5 or greater, respectively.

Figure 2 shows that among the six effects on Behavioral Intention three due to Flow Experience, Effort Expectancy, and Social Influence are positive, small but not statistically significant at a level of 0.05 or less. Each of the other three exogenous variables Perceived Enjoyment, Performance Expectancy, and Facilitating Conditions has a positive, medium, and statistically significant effect on Behavioral Intention. Table 6 displays the values of the range of fit statistics for the theoretical model as suggested by Kline (2005). It is seen that the theoretical model has fit statistics that are very satisfactory and a satisfactory proportion of the variance in Behavioral Intention ($R^2 = 30$ percent) is explained by the six exogenous variables that affect it.

Moderating Effects in the Theoretical Model

The moderating effects of Gender, Age, and Experience were examined using the following groups: (a) Gender: Males (396) and females (499); (b) Age: Greater than 18 years (426) and 18 years or less (469); and (c) Experience: 17 months or more (463) and less than 17 months (432).

The statistical significance of each of the moderating effects of Gender, Age, and Experience on the six direct effects on Behavioral Intention in the theoretical model was determined using the Multi Group Analysis feature of AMOS. For each pair of groups associated with Gender, Age, and Experience the value of the fit statistic Chi-square was computed for the *unconstrained* model, where none of the effects due to the two groups are constrained, and the *constrained* model where the direct effect is constrained to be the same for both groups. If the value of Chi-square for the *unconstrained* model is less than the value of Chi-square for the *constrained* model and the difference is statistically significant at a level of 0.05 or less then the conclusion is that the variable has a statistically significant moderating effect on that direct effect.

Table 7 shows full details for the direct effects for groups associated with Gender, Age, and Experience as well as the increase in chi-square and its statistical significance. Shaded rows highlight

Figure 2. Analysis of causal effects in the theoretical model

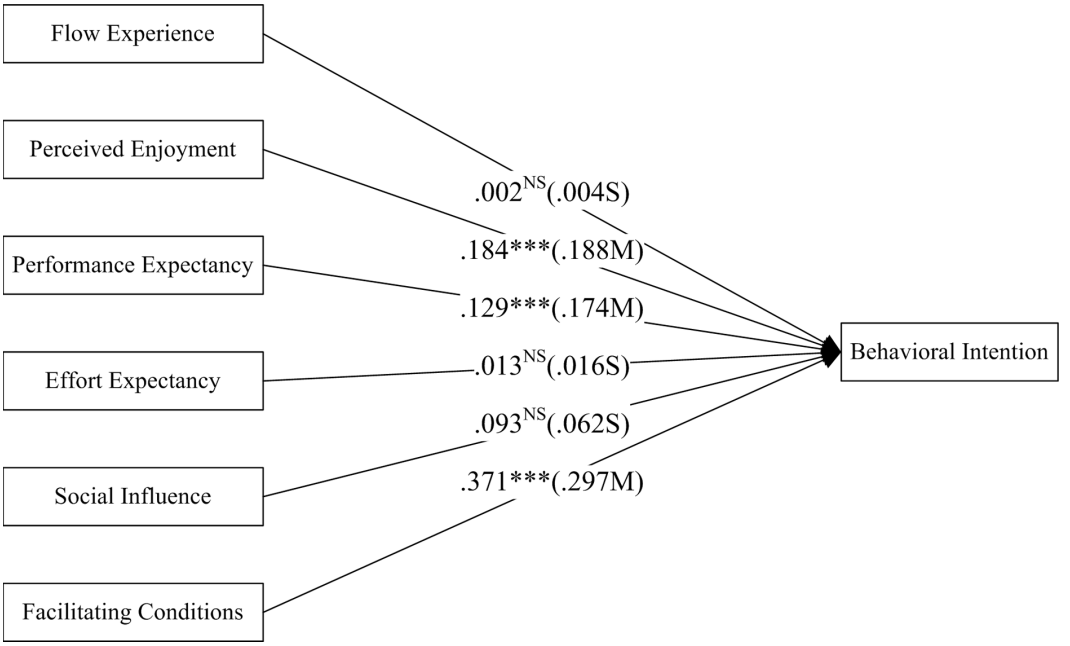


Table 6. Fit statistics for the theoretical model

Sample Size	Fit Statistics								R^2 (%)
	NC (χ^2/df)	RMR	GFI	AGFI	NFI	IFI	CFI	RMSEA	
895	487.580/168 = 2.902	.030	.950	.931	0.942	0.961	0.961	0.046	30

the direct effects where the moderating variable has a statistically significant moderating effect at a level of 0.05 or less.

From Table 7 it is seen that although there was an increase in the value of Chi-square in each case the increases were only statistically significant for the five cases highlighted.

Table 8 displays the fit statistics for the theoretical model when it is applied to each of the groups within Gender, Age, and Experience. It is viewed that the theoretical model is a satisfactory fit with the data for each of the groups and in each case satisfactory proportions of the variance of Behavioral Intentions (R^2) are explained (28-32 percent).

FINDINGS

The Respondents

The analysis of the characteristics of the respondents showed that they had sufficient experience and maturity to provide reliable and valid responses to the issues concerned with online gaming addressed in the study. In particular, in relation to the distributions of the variables Gender, Age and Experience there was empirical support for the two groups formed for each of these variables in order to investigate the possible moderating effects of these three variables on the direct effects on Behavioral Intention in the theoretical model.

Table 7. Analysis of causal and moderating effects among groups for Gender, Age, and Experience

Variable with Direct Effect on Behavioral Intention	Unstandardized Estimate	Statistical Significance	Standardized Estimate	Magnitude	Unstandardized Estimate	Statistical Significance	Standardized Estimate	Magnitude	Increase in Chi-square	Statistical Significance
Males (N = 396)					**Females (N = 499)**					
Perceived Enjoyment	.118	NS	.106	M	.217	***	.242	M	.866	NS
Performance Expectancy	.244	***	.301	M	.034	NS	.049	S	12.043	***
Facilitating Conditions	.435	***	.304	M	.339	***	.314	M	.417	NS
Flow Experience	.021	NS	.030	S	-.014	NS	-.024	S	.462	NS
Effort Expectancy	.019	NS	.022	S	-.001	NS	-.001	S	.066	NS
Social Influence	-.049	NS	-.029	S	.217	**	.177	M	5.020	*
Age > 18 years (N =426)					**Age ≤ 18 years** (N = 469)					
Perceived Enjoyment	.270	***	.260	M	.123	NS	.131	M	2.097	NS
Performance Expectancy	.093	*	.136	M	.167	***	.212	M	.198	NS
Facilitating Conditions	.300	**	.206	M	.419	***	.366	M	5.448	*
Flow Experience	-.064	NS	-.095	S	.057	NS	.086	S	5.482	*
Effort Expectancy	.115	*	.136	M	-.068	NS	-.083	S	.495	NS
Social Influence	.143	*	.110	M	.063	NS	.038	S	.613	NS
Experience ≥ 17 months (N =463)					**Experience < 17 months** (N = 432)					
Perceived Enjoyment	.079	NS	.072	S	.261	***	.287	M	3.026	NS
Performance Expectancy	.203	***	.256	M	.022	NS	.034	S	9.726	**
Facilitating Conditions	.422	***	.336	M	.275	.**	.240	M	.187	NS
Flow Experience	.018	NS	.025	S	-.005	NS	-.008	S	.011	NS
Effort Expectancy	.020	NS	.022	S	.012	NS	.017	S	1.487	NS
Social Influence	.061	NS	.038	S	.206	**	.161	M	1.132	NS

Note: *, **, and *** is the expression to show statistical significance at a level of 0.05, 0.01, and 0.001, respectively and NS is the expression to show not statistically significant at a level of 0.05 or less.

Table 8. Fit statistics for the groups within Gender, Age, and Experience

Groups	Sample Size	Fit Statistics								R^2 (%)
		NC (χ^2/df)	RMR	GFI	AGFI	NFI	IFI	CFI	RMSEA	
Gender										
Males	396	354.012/168 = 2.107	0.038	0.923	0.893	0.903	0.946	0.946	0.053	29
Females	499	323.338/168 = 1.925	0.027	0.941	0.918	0.930	0.965	0.965	0.043	31
Age										
Age > 18 years	426	271.340/168 = 1.615	0.028	0.943	0.922	0.928	0.971	0.971	0.038	32
Age ≤ 18 years	469	351.693/168 = 2.093	0.038	0.921	0.891	0.914	0.946	0.946	0.056	31
Experience										
Experience < 17 months	432	328.913/168 = 1.958	0.035	0.908	0.907	0.926	0.963	0.962	0.047	28
Experience ≥ 17 months	463	417.349/168 = 2.484	0.029	0.932	0.891	0.905	0.948	0.948	0.049	29

It was found that respondents believed that using online gaming systems: was easy; produced a feeling of total involvement and enjoyment; and that the infrastructure for online gaming systems was available to support the use of these systems. However, they did not believe that using online gaming systems would help them to attain personal gains and they did not believe that other people who were important to them would agree with their online gaming activities. The same general pattern of responses was observed for the females and males separately although the males were neutral as to whether or not the use of online gaming systems would help them to attain personal gains. Direct comparisons between the responses from males and females revealed similarities and differences. On average there was no significant difference with respect to their age, level of education, the extent of their involvement when playing online games, and the degree to which they believed that people who were important to them would agree with their online gaming activities. On the other hand, there were significant differences between males and females. Compared to females the males: are much more involved in gaming; find gaming more enjoyable; have a stronger belief that online games will help them to attain personal gains; find the gaming systems easier to use; have a stronger belief that the infrastructure of online gaming systems is available to support their use of these systems; and have a stronger intention to play online games in the future.

Correlations among variables revealed that, as expected, there were significant positive correlations among the variables associated with the frequency and duration of online gaming and that the values of these variables are positively correlated with: intentions to play online games in the future; the belief that online game infrastructure is well supported; the extent of involvement and enjoyment experienced when playing online games; and the belief that online games are easy to use and will help in attaining personal gains. Also, not surprisingly there were significant positive correlations among individuals' ages, levels of education, and their experience with online games. In particular, old (young) individuals experienced low (high) feelings of involvement and enjoyment and they found the gaming systems more (less) difficult to use.

Causal Effects

The strongest influence on an individual's intention to play online games in the future is the degree to which an individual believes that the infrastructure is available to support the use of online gaming systems (Facilitating Conditions). The next most important influence is due to the extent to which an individual perceives that playing online games is enjoyable (Perceived Enjoyment) and this is followed in order of importance by the degree to which an individual believes that using online games will help them to attain personal gains (Performance Expectancy). The important positive influence of Facilitating Conditions is in agreement with the findings in the study by Lee (2009). The importance of Perceived Enjoyment was also reported in several previous studies (Gao, 2004; Wang & Wang, 2008; Koo, 2009; Lee, 2009; Wei & Lu, 2014). Also, Performance Expectancy was identified as having an important influence on Behavioral Intention in several previous studies (Hsu & Lu, 2004; Lee, 2009; Fan et al., 2012). Other effects on Behavioral Intention due to: feelings of total involvement (Flow Experience); the ease of use of the gaming system (Effort Expectancy); and the extent to which other people, who were important to an individual, would agree that they should play online games (Social Influence) are only small and not statistically significant.

Decisions related to the research hypotheses associated with the direct effects on Behavioral Intention in the theoretical model (Table 5) are displayed in Table 9 which identifies hypotheses that were fully supported and those that were partially supported. Partially supported hypotheses are those where a positive statistically significant direct causal effect was not found but there was a positive statistically significant correlation between the variable and Behavioral Intention. References to previous studies are included which motivated the formulation of the hypothesis.

From Table 9 it is seen that there is either full or partial support for all of the hypotheses concerned with direct causal effects on Behavioral Intention.

Moderating Effects

Table 10 presents the conclusions related to the hypotheses concerning the moderating effects of Gender, Age and Experience (Table 5). In each case comments are provided on the nature of the effect for the two groups separately and references indicate previous studies which motivated the hypothesis.

From Table 10 it is seen that:

Table 9. Decisions for research hypotheses

Research Hypotheses	Reference
Supported	
H2: Perceived Enjoyment has a significant positive direct effect on Behavioral Intention.	Gao (2004), Wang & Wang (2008), Koo (2009), Lee (2009), Wei & Lu (2014)
H3: Performance Expectancy has a significant positive direct effect on Behavioral Intention.	Hsu & Lu (2004), Lee (2009), Fan et al. (2012)
H6: Facilitating Conditions has a significant positive direct effect on Behavioral Intention.	Lee (2009)
Partially Supported	
H1: Flow Experience has a significant positive direct effect on Behavioral Intention.	Hsu & Lu (2004), Lee (2009), Chaitaneeyachat (2012), Fan et al. (2012)
H4: Effort Expectancy has a significant positive direct effect on Behavioral Intention.	Gao (2004), Fan et al. (2012)
H5: Social Influence has a significant positive direct effect on Behavioral Intention.	Hsu & Lu (2004), Lee (2009), Chaitaneeyachat (2012), Fan et al. (2012)

Table 10. Hypotheses for Moderating effects of Gender, Age, and Experience

Research Hypotheses	Reference	Comments	
Moderating Effects of Gender			
Supported		**Effect for Males**	**Effect for Females**
H8: Gender has a significant moderating effect on the direct effect of performance expectancy on behavioral intention.	Venkatesh et al. (2003), Nysveen et al. (2005)	Medium, Positive, Statistically significant	Small, Positive, Not statistically significant
Not Supported			
H7: Gender has a significant moderating effect on the direct effect of perceived enjoyment on behavioral intention.	Lee (2009)	Medium, Positive, Not statistically significant	Medium, Positive, Statistically significant
H9: Gender has a significant moderating effect on the direct effect of effort expectancy on behavioral intention.	Venkatesh et al. (2003)	Small, Positive, Not statistically significant	Small, Negative, Not statistically significant
Moderating Effects of Age			
Supported		**> 18 Years**	**≤ 18 Years**
H11: Age has a significant moderating effect on the direct effect of effort expectancy on behavioral intention.	Venkatesh et al. (2003)	Medium, Positive, Statistically significant	Small, Negative, Not statistically significant
Not Supported			
H10: Age has a significant moderating effect on the direct effect of performance expectancy on behavioral intention.	Venkatesh et al. (2003)	Medium, Positive, Statistically significant	Medium, Positive, Statistically significant
H12: Age has a significant moderating effect on the direct effect of facilitating conditions on behavioral intention.	Venkatesh et al. (2012)	Medium, Positive, Statistically significant	Medium, Positive, Statistically significant
Moderating Effects of Experience			
Not Supported		**≥ 17 months**	**< 17 months**
H13: Experience has a significant moderating effect on the direct effect of effort expectancy on behavioral intention.	Venkatesh et al. (2003)	Small, Positive, Not statistically significant	Small, Positive, Not statistically significant
H14: Experience has a significant moderating effect on the direct effect of social influence on behavioral intention.	Venkatesh et al. (2003)	Small, Positive, Not statistically significant	Medium, Positive, Statistically significant
H15: Experience has a significant moderating effect on the direct effect of facilitating conditions on behavioral intention.	Lee (2009)	Medium, Positive, Statistically significant	Medium, Positive, Statistically significant

For gender:

a. Hypothesis H8 was supported and the effect of Performance Expectancy on Behavioral Intention was important only for males. This is in agreement with the finding by Nysveen et al. (2005).
b. Hypothesis H7 was not supported and this is in agreement with the finding by Wang & Wang (2008). However, the effect of Perceived Enjoyment on Behavioral Intention was important only for females.

For age:

a. Hypothesis H11 was supported and the effect of Effort Expectancy on Behavioral Intention was important only for those older than 18 years. This is in agreement with the finding by Venkatesh et al. (2003).
b. Hypotheses H10 and H12 were not supported but the effects of Performance Expectancy and Facilitating Conditions on Behavioral Intention were important for both age groups. This is not in agreement with the findings by Venkatesh et al. (2003), (2012).

For experience:

a. Hypothesis H13 was not supported. Contrary to the finding by Venkatesh et al. (2003) the effect of Effort Expectancy on Behavioral Intention was not important for either of the experience groups.
b. Hypothesis H14 was not supported but the effect of Social Influence on Behavioral Intention was important only for those with less than 17 months experience. This is in agreement with the finding by Venkatesh et al. (2003).
c. Hypothesis H15 was not supported but the effect of Facilitating Conditions on Behavioral Intention was important for both experience groups. This is contrary to the finding by Lee (2009).

In summary, there was support for only two of the nine moderating effects derived from previous studies. However, there were cases where even though the moderating effect was or was not significant there were noticeable differences or similarities between the groups in relation to the causal effect on Behavioral Intention that was being examined. In addition, it is acknowledged that the choice of different groups for Age and Experience may have produced different results for moderating effects. However, as explained previously the groups used in this study were rational in terms of the distributions of the variables Age and Experience.

New Findings

The results of the study include new findings which are not stated in previous studies. It is noted that there was full or partial support for the six hypotheses (hypotheses H1 – H6) which were derived from previous studies. Consequently, the study has not highlighted any new results related to direct causal effects on Behavioral Intention.

However, the analyses of the theoretical model for each of the separate groups within Gender, Age, and Experience summarized in Table 7 with satisfactory fit statistics in Table 8 suggest results which are not commonly reported. The theoretical model has the best fit with the data for individuals who are older than 18 years. The next best fit is with the data for females followed by the data for individuals with less than 17 months of experience with online gaming. Next is the fit with the data from the entire sample and this is followed in order by the fit with the data for males, individuals of age 18 years or less, and finally those with 17 or more months of experience with online gaming.

Among the hypotheses derived from previous studies concerning the moderating effects due to Gender, Age, and Experience there were only two hypotheses which were supported (H8 and H11) and the remaining seven hypotheses were not supported. It is necessary to accept that the lack of support for these seven hypotheses represents new findings and the details associated with these new findings have been presented in the comments column in Table 10. Additional new findings concerned with the moderating effects of Gender, Age, and Experience are shown in Table 11 where results that are statistically significant are italicized in bold type. It is emphasized that all of the new findings in Table 11 need to be validated in further studies.

DISCUSSION AND FUTURE WORK

From a theoretical perspective the study has confirmed findings from previous studies related to direct causal effects on Behavioral Intention (Table 9). In particular, the strongest influence on an individual's intention to play online games is the extent to which infrastructure is available to support the use of online gaming systems. The next most important influence is the extent to which an individual perceives that playing online games is enjoyable and this is followed by the extent to which an individual believes that using online games will help them to attain personal gains. Other effects on Behavioral Intention due to: feelings of total involvement; the ease of use of the system; and the extent to which close associates agree that they should play online games are only small and not statistically significant. However, the analyses of moderating effects (Tables 10 and 11) revealed new findings involving the moderating effects of gender, age, and experience on the direct influence on an individual's intention due to social influences, feelings of involvement, and perceptions of

Table 11. New findings related to the moderating effects of Gender, Age, and Experience

Moderating effects of Gender, Age, and Experience
Gender
(a) ***Gender has a significant moderating effect on the direct effect of Social Influence on Behavioral Intention. For females the effect of Social Influence on Behavioral Intention is medium, positive, and statistically significant*** but for males the effect is small, negative, and not statistically significant.
(b) Gender does not have a significant moderating effect on the direct effect of Flow Experience or Facilitating Conditions on Behavioral Intention. For males the effect of Flow Experience on Behavioral Intention is small, positive, and not statistically significant and for females the effect is small, negative, and not statistically significant. ***For males and females the effect of Facilitating Conditions on Behavioral Intention is medium, positive, and statistically significant.***
Age
(a) ***Age has a significant moderating effect on the direct effect of Flow Experience on Behavioral Intention.*** For those of age 18 years or less the effect of Flow Experience on Behavioral Intention is small, positive, and not statistically significant and for those of age greater than 18 years the effect is small, negative, and not statistically significant.
(b) Age does not have a significant moderating effect on the direct effect of Perceived Enjoyment or Social Influence on Behavioral Intention. ***For those of age greater than 18 years the effect of Perceived Enjoyment on Behavioral Intention is medium, positive, and statistically significant*** and for those of age 18 years or less the effect is medium, positive, but not statistically significant. ***For those of age greater than 18 years the effect of Social Influence on Behavioral Intention is medium, positive, and statistically significant*** and for those of age 18 years or less the effect is small, positive, and not statistically significant.
Experience
(a) ***Experience has a significant moderating effect on the direct effect of Performance Expectancy on Behavioral Intention.*** ***For those with experience of 17 months or more the effect of Performance Expectancy on Behavioral Intention is medium, positive, and statistically significant*** and for those with experience less than 17 months the effect is small, positive, but not statistically significant. **(b)** Experience does not have a significant moderating effect on the direct effect of Perceived Enjoyment or Flow Experience on Behavioral Intention. ***For those with experience less than 17 months the effect of Perceived Enjoyment on Behavioral Intention is medium, positive, and statistically significant*** but for those with experience of 17 months or more the effect is small, positive, and not statistically significant. **(c)** For those with experience of 17 months or more the effect of Flow Experience on Behavioral Intention is small, positive, and not statistically significant and for those with experience less than 17 months the effect is small, negative, and not statistically significant.

personal attainments, respectively. Also, new findings emerged for differences and similarities in the significant effects in the theoretical model among the groups defined within the scales of gender, age, and experience.

From a practical perspective the findings are relevant to three groups: those who want to increase the use of online gaming for business reasons; those who want to limit usage because of concerns about behaviors that may negatively impact the personal and social lives of online gamers; and online game users who are concerned about their personal data which may be made available to others.

The group, who wants to increase the usage of online games for economic interests, comprises game developers, governments, and others who are concerned with convincing family members and peer groups in society to support online gaming. Game developers need information to design games and promote the acceptance of games among specific users. The determinants of the adoption of online gaming technologies must be known in order to design good games and increase their acceptance. Developers want to know the age and gender of players, their emotional feelings when playing games, and the extent to which they intend to continue to play online games. Developers must also be concerned with the place where the games are usually played and usage factors such as the number of times games are played each week and the number of hours per week games are played. The government is concerned with video game development in relation to increasing domestic economic growth through the use of regulation. They usually support local game developers through regulation and by providing good internet access in their country. The fact that most gamers feel enjoyable when playing at home and feel content with the infrastructure that exists to support them to use the gaming system are inputs that motivate governments to provide good network infrastructure for families. Government policies can further assist parents to exert control over their children with respect to online games.

Those who wish to limit online game usage want to know about the social influences on an individual's intention to use online games. The findings in this study suggest that in general playing intentions are not strongly influenced by the degree to which they think that important others (e.g. friends, teachers, or parents) believe that they should use online games. However, the effect of Social Influence on Behavioral Intention was important for: females but not for males; those older than 18 years; and those with less than 17 months online gaming experience. The other findings with practical importance concern the usage rates for online games. In this study almost half of the respondents play for 10 hours or less per week with most of these playing 6-10 hours per week. However, there were quite large numbers of respondents playing for much longer periods of time each week: 16-20 hours (18 percent); and 36-45 hours (11 percent). Based on this information, governments, parents, and teachers may guide game players to better manage their time for study, social interaction, family, and for playing games.

Online gamers also benefit from the findings of the study. The adoption of online games has seen the development of online game communities which share information about professional gaming. These communities of online players may use the findings of the study to better understand their members and their behaviors especially the findings related to gender, age, and experience.

In order to illustrate the practical implications of the theoretical findings of the study Table 12 displays a hierarchy of six actions in decreasing order of effectiveness in achieving the objective of increasing an individual's intention to play online games. For each action comments include additional information relevant to the action which was derived from the findings associated with the moderating effects of Gender, Age, and Experience.

From Table 12 it is noted that it would be possible to construct a hierarchy of actions designed to decrease an individual's intentions to play online games. This has not been done as it simply amounts to considering the opposite actions to those proposed in Table 12 with obvious changes to the comments.

This study on the adoption of online game technologies appears to be the first conducted in the context of Indonesia. Consequently, there is a limitation on its external validity and repeating the study is strongly recommended. It is also necessary that future studies consider different groups

Table 12. Hierarchy of actions to increase an individual's intention to play online games

Action	Comment	Related Model Construct
Objective: To increase an individual's intention to play online games		
1. Increase the degree to which an individual believes that an infrastructure is available to support use of the gaming system. Supporting of good technical infrastructure by game developer, governments, and other organizations will increase intentions to play online games.	This action should focus on all respondents regardless of their gender, age, or experience with online games	Facilitating Conditions, Gender, Age, and Experience
2. Increase the extent to which an individual perceives that playing online games is enjoyable. Good design and role play of online games will increase enjoyable of gamers and then an intention to play online games.	For this action particular attention should be given to: (a) males; (b) those of age ≤ 18 years; and (c) those with ≥ 17 months experience because the effect of Perceived Enjoyment on Behavioral Intention was not strong for these groups.	Perceived Enjoyment, Gender, Age, and Experience
3. Increase the degree to which an individual believes that using gaming system will help them to attain personal gains. Knowing the personal goals of online gamers and adapting games to these goals will increase intentions to play the games.	For this action particular attention should be given to: (a) females; (b) those with ≥ 17 months experience because the effect of Performance Expectancy on Behavioral Intention was not strong for these groups.	Performance Expectancy, Gender, Age, and Experience
4. Increase the degree to which other people, who were important to an individual, would agree that they should play online games.	For this action particular attention should be given to: (a) males; (b) those of age ≤ 18 years; and (c) those with ≥ 17 months experience because the effect of Social Influence on Behavioral Intention was not strong for these groups.	Social Influence, Gender, Age, and Experience
5. Improve the ease of use of online gaming systems.	For this action particular attention should be given to all respondents regardless of their gender or their experience with online games noting that there is a significant effect of Effort Expectancy on Behavioral Intention only among those of age > 18 years.	Effort Expectancy, Gender, Age, and Experience
6. Increase the extent to which an individual feels that they act with total involvement when playing online games.	For this action particular attention should be given to all respondents regardless of their gender, age, or their experience with online games because for all of the respondents the effect of Flow Experience on Behavioral Intention was not significant for any of the groups within Gender, Age, or Experience.	Flow Experience, Gender, Age, and Experience

associated with Age and Experience in order to further examine the moderating and causal effects associated with these variables. Also, future research may expand the theoretical model in the study by introducing other constructs such as Habit and Price Value as proposed in the UTAUT2 model by Venkatesh et al. (2012) where the separate variables Perceived Enjoyment and Flow Experience in this study are replaced by a single variable referred to as Hedonic Motivation. It is also possible that cross cultural investigations may be conducted.

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APPENDIX

Notated Questionnaire

The questionnaire has been abbreviated and notated to indicate the labels and measuring scales used for variables and indicators.

Do you have any experience playing online games? ☐ Yes ☐ No
If your answer is *No* then please *do not* continue with the questionnaire.
If your answer is *Yes* then please name an online game you have played recently (GAME) _____

1. Your age in years (A): _____ years.
2. What is the highest level of education that you have completed or you are studying at present? (EDU) ☐ High School (12) ☐ Bachelor degree (16) ☐ Master degree (18) ☐ Doctoral degree (22)
3. Your gender (G): ☐ Male (1) ☐ Female (2)
4. How do you play online games (TECH)? ☐ Desktop PC (1) ☐ Laptop/notebook (2) ☐ Mobile phones/tablets (3)
5. How long have you been playing online games? (E) ☐ Less than or equal to 1 month (1) ☐ 2-4 months (3) ☐ 5-7 months (6) ☐ 8-10 months (9) ☐ 11-13 months (12) ☐ 14-16 months (15) ☐ 17 months or more (18)
6. At which location do you mostly play online games? (LOC) ☐ Home/friends home (1) ☐ School/College/University (2) ☐ Net Café/game center (3)
7. What type of online games do you usually play? (TYPE) ☐ Single player (1) ☐ Multi players (2) ☐ Massively Multi players (3)
8. On average how many times each week do you play online games? (TIMES) ☐ one time (1) ☐ two times (2) ☐ 3 times (3) ☐ 4 times (4) ☐ 5 times (5) ☐ 6 times (6) ☐ 7 times (7) ☐ 8 times (8) ☐ 9 times (9) ☐10 or more times (10)
9. Each time you play online games how many hours do you spend playing? (HOURS) ☐ Less than 1 hour (1) ☐ 1 – 2 hours (2) ☐ 3 – 4 hours (4) ☐ 5 hours or more (6)

Please mark how strongly you agree or disagree with each of the following statements using measuring scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), and Strongly Agree (5)

	Statement	Indicator		Statement	Indicator
1	When playing online games I do not realize how much time has passed.	FE1	**12**	Learning to operate online games is easy for me.	EE3
2	When playing online games, I am not aware of things happening around me.	FE2	**13**	People who influence me think that it is good for me to play online games.	SI1
3	When playing online games, I often forget the other things that I must do.	FE3	**14**	People who are important to me think that I should play online games.	SI2
4	I find playing online games is enjoyable.	PCE1	**15**	My family thinks that playing online games is a good for me.	SI3
5	Playing online games gives me pleasure.	PCE2	**16**	I have the resources needed to play online games.	FC1
6	Playing online games is good fun.	PCE3	**17**	I have the knowledge needed to play online games.	FC2
7	Playing online games helps me to reach my personal goals.	PE1	**18**	Online games are similar to other technologies that I use.	FC3
8	Playing online games helps me satisfy my objectives.	PE2	**19**	I can get help from others when I have difficulties playing online games.	FC4
9	Playing online games helps me to achieve my personal aims.	PE3	**20**	I intend to play online games in the future.	BI1
10	It would be easy for me to become skillful in playing online game.	EE1	**21**	I predict that I will continue to play online games in the future.	BI2
11	I find that online games are easy to use.	EE2	**22**	I plan to play online games in the future.	BI3

Table 13. Construct validity and equivalence reliability of latent variables

Indicator	Latent Variable							Cronbach Alpha Coefficient
	Performance Expectancy	Behavioral Intention	Effort Expectancy	Perceived Enjoyment	Social Influence	Flow Experience	Facilitating Conditions	
PE2	**.899**	.117	.114	.104	.147	.019	.082	0.910 Excellent
PE1	**.877**	.140	.034	.171	.104	.020	.061	
PE3	**.868**	.130	.106	.082	.190	-.008	.065	
BI3	.140	**.897**	.092	.130	.052	.021	.148	0.894 Good
BI2	.122	**.876**	.093	.152	.047	.049	.103	
BI1	.119	**.821**	.145	.155	.079	.027	.193	
EE2	.014	.098	**.868**	.102	.052	.060	.079	0.794 Acceptable
EE3	.023	.122	**.842**	.164	.042	.074	.128	
EE1	.260	.090	**.686**	.144	.006	.054	.181	
PCE3	.120	.153	.183	**.811**	-.028	.071	.139	0.820 Good
PCE2	.221	.169	.120	**.794**	.078	.069	.130	
PCE1	.045	.136	.140	**.777**	-.014	.181	.170	
SI2	.073	.048	-.010	.076	**.858**	-.002	-.024	0.711 Acceptable
SI1	.155	.022	.096	.119	**.820**	.034	.014	
SI3	.131	.074	-.006	-.182	**.664**	-.073	.115	
FE3	.013	.026	-.013	.061	-.069	**.836**	-.037	0.716 Acceptable
FE2	.062	.048	.071	.044	.052	**.804**	-.030	
FE1	-.049	.004	.096	.140	-.025	**.733**	.103	
FC1	.065	.104	.034	.052	.062	.027	**.831**	0.709 Acceptable
FC3	.072	.147	.115	.144	.076	-.024	**.751**	
FC2	.032	.173	.383	.283	-.085	.047	**.627**	

Total Variance Explained

Latent Variable	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	Percentage of Variance	Cumulative Percentage	Total	Percentage of Variance	Cumulative Percentage
Performance Expectancy	5.571	26.527	26.527	2.576	12.265	12.265
Behavioral Intention	2.491	11.860	38.387	2.473	11.776	24.041
Effort Expectancy	1.858	8.847	47.235	2.250	10.712	34.753
Perceived Enjoyment	1.597	7.603	54.837	2.243	10.681	45.434
Social Influence	1.475	7.026	61.863	1.965	9.358	54.792
Flow Experience	1.237	5.889	67.752	1.950	9.284	64.076
Facilitating Conditions	1.108	5.276	73.028	1.880	8.952	73.028

Notes: (a) Interpretation of the value of a Cronbach Alpha Coefficient follows George & Mallery (200[illegible]; **(b)** Extraction Method: Principal Component Analysis; **(c)** Rotation Method: Equamax with Kaiser Normalization. Rotation converged in 6 iterations; **(d)** Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .830; **(e)** Bartlett's Test of Sphericity Approx: Chi-Square = 8267.191, df = 210, p = 0.000; **(f)** Significant loading factors are highlighted; **(f)** Only factors (latent variables) with eigenvalues ≥ 1 are shown.

Table 14. Descriptive statistics

Variable /Indicator	Mean	Standard Deviation	Skewness	Kurtosis	Variable /Indicator	Mean	Standard Deviation	Skewness	Kurtosis
Age	17.87	2.595	-.491	-.286	EE1	3.54	.782	.030	-.420
Experience	11.76	6.790	-.417	-1.537	EE2	3.72	.821	-.091	-.590
Flow Experience	3.31	.831	-.298	-.124	EE3	3.74	.782	-.050	-.544
FE1	3.73	1.021	-.734	.077	Social Influence	2.57	.585	-.484	.383
FE2	3.01	1.010	.160	-.758	SI1	2.80	.747	-.012	.725
FE3	3.20	1.089	-.140	-.841	SI2	2.52	.706	-.259	-.211
Perceived Enjoyment	4.21	.595	-.216	-.736	SI3	2.40	.752	-.214	-.482
PCE1	4.38	.655	-.592	-.654	Facilitating Conditions	3.67	.627	.210	-.404
PCE2	4.07	.722	-.178	-.852	FC1	3.46	.911	-.161	-.482
PCE3	4.16	.702	-.394	-.371	FC2	3.95	.711	-.145	-.456
Performance Expectancy	2.79	.795	.318	.295	FC3	3.59	.740	.087	-.372
PE1	2.83	.862	.380	.300	Behavioral Intention	3.43	.602	1.230	.616
PE2	2.76	.864	.296	.192	BI1	3.47	.678	.984	-.027
PE3	2.78	.864	.305	.143	BI2	3.42	.669	.970	.230
Effort Expectancy	3.67	.669	.098	-.536	BI3	3.40	.641	1.131	.444

Table 15. Correlations among variables

Variable		Profile Variable				Model Variable							
		EDU	N	H	H/W	A	E	FE	PCE	PE	EE	SI	FC
Profile Variable	Level of Education (EDU)	1											
	Number of Times Games Are Played Each Week (N)	.057	1										
	Number of Hours Each Time Games Are Played (H)	.025	**.219**	1									
	Number of Hours per Week Playing Games (H/W)	.038	**.666**	**.803**	1								
Model Variable	Age (A)	**.434**	.051	-.017	.011	1							
	Experience (E)	**.079**	**.347**	**.400**	**.429**	**.078**	1						
	Flow Experience (FE)	-.057	**.066**	**.160**	**.119**	**-.103**	.020	1					
	Perceived Enjoyment (PCE)	-.025	**.296**	**.322**	**.355**	**-.068**	**.288**	**.237**	1				
	Performance Expectancy (PE)	.021	**.151**	**.242**	**.256**	-.027	**.173**	.042	**.320**	1			
	Effort Expectancy (EE)	-.033	**.241**	**.237**	**.268**	**-.071**	**.228**	**.155**	**.394**	**.250**	1		
	Social Influence (SI)	-.046	-.009	.003	-.026	.026	-.021	-.028	**.068**	**.315**	**.100**	1	
	Facilitating Conditions (FC)	.054	**.268**	**.250**	**.293**	.026	**.274**	**.070**	**.409**	**.214**	**.397**	**.094**	1
	Behavioral Intention (BI)	-.024	**.245**	**.203**	**.274**	.036	**.226**	**.093**	**.392**	**.322**	**.305**	**.153**	**.385**

Notes: (a) Correlation coefficients in bold type are statistically significant ($p < 0.05$); (b) Shaded cells are correlation coefficients associated with the six causal effects in the theoretical model.

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