

The Technology Acceptance Model for Playing Console Game in Korea

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Summary

Console game market has the largest percentage of the overall game market share. As high-speed internet spreads more and more, the market share of console games seems to be decreased. To increase the game market share of console games, we need to find out main factors that influence on console game acceptance. In this study, extended TAM to examine the influences is proposed and empirically tested by survey of 58 students who have played console games. The results showed that both accessibility factors and flow factors played an important role in intention to play a console game. Furthermore, both perceived ease of use and accessibility strongly effect on flow.

Key words:

TAM, Technology Acceptance Model, Console Game, Survey

1. Introduction

“A console game is a form of interactive multimedia used for entertainment. The game consists of manipulable images (and usually sounds) generated by a video game console, and displayed on a television or similar audio-video system.”-[from wikipedia] The first console game “Odyssey” was developed by "Magnavox Company" in 1972. Nintendo launched FAMICOM in 1990 and FAMICOM was so popular and addictive. Launching of FAMICOM brought "Nintendo syndrome" and it became a social problem. Sony Computer Entertainment (SCE) launched "Play Station" in 1994 and it was very well-received by the public. Console games have much larger worldwide game market share than that of online games. But in Korea, online games are much more popular than console games because of wide spread of high-speed internet. As high-speed internet spreads more and more to worldwide, the market share of console games seems to be decreased. Actually, total sales of Play Station (Sony) and X-box (MD) decreased about 35% compare to the previous year. Although console game market has the largest percentage of the overall game market share, decrease of console game market share seems to be continued. To increase the game market share of console games, we need to find out main factors that motivate people to play console games. In this study, we employed Technology

Acceptance Model (TAM) to analyze and to find the main factors. We set Perceived Usefulness, Perceived ease of use, Flow, Accessibility, Attitude, Intention as main independent factors in TAM model. Flow and accessibility are additional variables included in the model to involve various elements of console game in our result.[1,2] We did a survey of 58 students who have played console games for this study. We expect to find out main factors that motivate people to play console games by the result of this study.

2. Literature Review

2.1 TAM

Davis(1989) proposed TAM(Technology acceptance model) for predicting technology acceptance with two key determinants; perceived usefulness and perceived ease of use. The perceived usefulness is defined as ‘the degree to which a person believes that using a particular system would enhance his or her job performance’ and the perceived ease of use is defined as ‘the degree to which a person believes that using a particular system would be free of effort.’ [3] TAM has received considerable attention of researcher in the user’s acceptance and behavior of information technology because of its high explanatory power. You and Park (2010) looked into study for technology acceptance model's evolutionary process by year and categorized characteristic of each proposed models in the aspects of model construction, input variables, application field and methodology. According to this study, limitation of each TAM and after research line is presented.[4]

2.2 Flow experience

Game industry has grown up continuously and nowadays Game can be played by various platform like PC, game console and mobile device etc. The reasons that people play games are an important area of research. [5] Therefore,

there are many studies for game acceptance using extended TAM. In the context of game acceptance, flow experience is considered additional variables. Csikszentmihalyi (1989) introduced concept of flow as ‘the holistic experience that people feel when they act with total involvement.’ When in the flow state, people become absorbed in their activity.[6] For Game is entertainment technology based on the hedonic value, it needs additional variable like flow experience when acceptance model is built. Actually, Shintaro at. al(2012), Kim and Park(2006), Hsu and Lu(2003) proposed TAM with additional variable including flow experience.[7, 8, 9] Hsu and Lu(2003) applies the TAM that incorporates social influences and flow experience to predict user’s acceptance of on-line games. For on-line game is entertainment oriented technology, flow is treated as an extremely enjoyable experience in an on-line game activity. Kim and Park(2006) proposed OGAM(Online game acceptance model) that contains not only perceived usefulness and perceived ease of use but concept of flow for explaining user’s acceptance of online game. Shintaro at. al (2012) extended the TAM incorporating two variables: inherent novelty seeking and social norms for study about the adoption behavior of mobile games across global youth. Propensity of novelty seeking among the youth will affect its antecedents such as perceived fun.

3. Research model and hypotheses

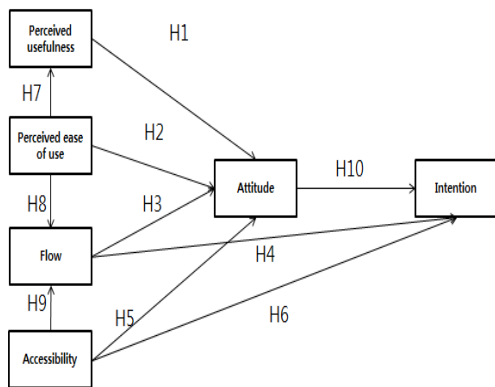


Figure 1. The research model

Fig. 1 depicts the research model used in this study. This model integrates flow and Accessibility into the original TAM.

A Hypothesis of this study is:

- H1.** There is a positive relationship between perceived usefulness and attitude towards console game
- H2.** There is a positive relationship between perceived ease of use and attitude towards console game
- H3.** There is a positive relationship between flow and

attitude towards console game

H4. There is a positive relationship between flow and intention to play console game

H5. There is a positive relationship between accessibility and attitude towards console game

H6. There is a positive relationship between accessibility and intention to play console game

H7. There is a positive relationship between perceived ease of use and perceived usefulness

H8. There is a positive relationship between perceived ease of use and flow

H9. There is a positive relationship between accessibility and flow

4. Research method

4.1 Data collection

Our study aimed at investigating students’ adoption of console game such as PS3, Nintendo WII etc. A total of 55 usable questionnaires were collected. Among the respondents, 12 were female and 43 were male. Most respondents have played a console game.

4.2 Measures

The measures of this research were adapted from Hsus’ prior study with modifications to fit the specific context of the playing on-line games. Measurement of perceived usefulness, ease of use, flow, accessibility, attitude, intention to play console game were phrased on a five-point likert scale, from 1=strongly disagree to 5=strongly agree. The measures of this study are shown in Table 1.

Table 1 : Survey questions and constructs

Constructs	Questions
Perceived Usefulness	Playing console game will help me pal around with others closely.
	Playing console game is enough for stress solution.
	Playing console game is very valuable in my life.
	I can spend my spare time to playing console game.
Perceived ease of use	Instruction for playing console game will be easy to follow
	It will be easy to operate console games.
Flow	When I play a console game, I feel that I’m in flow.
	I have an interest in playing a console game.
	I become curious about new episode.
Accessibility	people invite me to play a console game.

	There is an enough space(game station) to play console game.
Attitude	The idea of a console game is:(very bad-very good)
	Playing a console game would be:(very unpleasant-very pleasant)
	Playing a console game is an idea:(dislike-like)
Intention	I will play a console game regularly.
	I will keep playing a console game.
	I will play a console game even though other media appear.

	x4	0.795	
Perceived ease of use	x5	0.661	0.819
	x6	0.637	
	x7	0.794	
Flow	x8	0.864	0.858
	x9	0.801	
	x10	0.633	
Accessibility	x11	0.622	0.718
	y1	0.790	
Attitude	y2	0.727	0.804
	y3	0.809	
	y4	0.940	
Intention	y5	0.911	0.953
	y6	0.954	

5. Results

5.1 Validity and Reliability

Construct validity defines how well a test or experiment measures up to its claims. It refers to whether the operational definition of a variable actually reflects the true theoretical meaning of a concept. Construct validity of more than 0.50 and composite reliability of 0.70 or above are deemed acceptable, as shown Table 2.

Table 2 : Hypothesis test and estimate

Hypothesis	Support	regression coefficient
H1: PU⇒A	yes	1.106*
H2: PEU⇒A	no	3.124
H3: F⇒A	no	-3.185
H4: F⇒Play	no	0.75
H5: Acc⇒A	no	1.858
H6: Acc⇒Play	yes	0.533**
H7: PEU⇒PU	yes	1.021***
H8: PEU⇒F	yes	1.137***
H9: Acc⇒F	yes	0.530**
H10: A⇒Play	yes	0.979**

5.2 The structural model

The fit statistics state that the research model provides a normal fit to the data($\chi^2=224$, $p=0.000$; RMSEA=0.124). Hypothesis 1, 6, 7, 8, 9, 10 were supported with a statistically significant relationship as shown in Table 3. The findings indicated that accessibility is directly strong impacts on playing console game.

Table 3 : Standard regression weights and Cronbach's alpha

		Standardized regression weights	Cronbachs' Alpha
Perceived Usefulness	x1	0.697	0.853
	x2	0.809	
	x3	0.782	

6. Conclusions and discussion

The purpose of this study was to extend TAM for examining the influences on console game acceptance and this is one of the few attempts to investigate acceptance of console games. We verified the effect of perceived usefulness, perceived ease of use, attitude, flow, accessibility on the behavior of console game users. The results showed that both accessibility and flow played an important role in intention to play a console game. Furthermore, both perceived ease of use and accessibility strongly effect on flow. In short, fun and addiction and accessibility of console game are the most important factors to accept a console game.

There are several limitation on this study. First, this study needs more important factors such as social influences. Social influences factors already have been verified before as a good external factor. Second, this study measured accessibility using only two questions. It needs more detailed description of accessibility. Finally, the fit of suggested model is not so good as 0.124 RMSEA. However, it is clear that we attempt to investigate acceptance of console games including TAM with Flow and Accessibility. If we overcome these limitations, study of console game acceptance could be greater.

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