

A Study of the Factors Affecting the Purchase Intention on Mobile Game Apps

Hsin-Ke Lu, Peng-Chun Lin, and Yi-Chen Lin

Information Management Department, SCE, Chinese Culture University, Taipei, Tawan (R.O.C)

Email: {sklu, pclin, Yi-Chen.Lin }@sce.pccu.edu.tw

Abstract—With the widespread popularity of smartphone and tablet devices, consumers' demands for mobile application (App) also rockets rapidly nowadays. According to Flurry's survey, nearly 55 million shipment of smart mobile device were increased in the U.S. market while 1.5 hundred million devices were increased in China Market solely in the past year. This dramatic growth of global smartphone market share also brought about the thriving rise of App. Taiwan Network Information Center (TWNIC) had conducted a survey on Taiwanese's use of mobile devices in 2012, finding out that their most favorite App was game App and social App was the second. This also showed the increasing growth of mobile device and that game App took the lead for the users in Taiwan. In the background of this rapid development and intensive competition of game App, the developers pay much attention to users' considerations for purchasing game App and their use behaviors. The researcher of this study used Unified Theory of Acceptance and Use of Technology (UTAUT) as the theoretical framework and further extended its model by adding two dimensions of Price and Product Involvement to investigate consumers' purchase intention of game App. The results show that the constructs, Performance Expectancy and Social Influence had significant effects on behavioral intention on game app, and Facilitating Conditions and Price had direct effect on their purchase behavior. This study suggested product involvement effects on the factors affecting on purchase intention and behavior. This extended UTAUT also offers significant reference for future studies of purchase intention and behavior.

Index Terms—application, App, game, UTAUT, price, product involvement

I. INTRODUCTION

As smartphone gains wide popularity, Apps sprang up like mushrooms and they were massively downloaded and used. Moreover, mobile network coverage has broadened and mobile phone users have got used to looking for and downloading Apps in the market, hence this has caused direct impacts for the e-commerce market.

Currently, the App market categorized smartphone App into two types including game App and App. Besides, App was divided into free App and paid App. The purposes of this study were to investigate smartphone users' purchase intention for paid game App, find out the tangle factors affecting their purchase

intention for paid game App, and finally offer references for related industries and researchers.

According to the survey provided by International Data Corporation (IDC), the global smartphone shipment in 2013 had reached 1 billion and it was estimated that the number will reach 1.7 billion in 2017; among the market, Asia's smartphone shipment was the highest, accounting for more than 50% [1].

The international survey and research firm Gartner also predicted that the downloading quantity of mobile device App will reach 268 billion in 2017 [2]. Reports related to App indicated that game App was the most welcomed App which also brought about the most revenue both for Google Play and iOS App Store since Q1 to Q2 in 2013 [3]. Furthermore, users of iOS mobile device were more willing to pay for paid App and actually paid more than those of Android mobile device. Free App has become a trend, but App developers can still earn profits through the methods of advertisement, in-App Purchase, paid for advanced version and paid for version without advertisement etc. It was mentioned that In-App Purchase had become a trend and the major revenue source in Google I/O 2013 conference [3]. Moreover, the revenue of In-App Purchase had grown 700% compared with the same period last year for Google play; this showed that this type of payment mechanism was acceptable by most consumers. The above-mentioned data indicated that App has become a very significant product in the market. It will produce numerous business opportunities and increase rapidly year by year. Creating highly functional App is important, but satisfying consumers' needs is more critical. For App developers, how to make consumers accept and purchase their products is a highly vital issue.

The purpose of this study was to understand smartphone users' purchase intention for game App based on Unified Theory of Acceptance and Use of Technology (UTAUT) by adding the dimension of "price". Besides, the researcher added "product involvement" as a moderator in order to predict their purchase intention for game App more precisely.

Main research purposes included:

1. Investigating smartphone users' purchase intention for game App by UTAUT.
2. Adding "price" and "product involvement" variables and investigating their influences on users' purchase intention for game App.

3. Studying consumers' behavioral intention and purchase intention by multiple dimensions and moderators, expecting that those data would be helpful for related researches and industries.

II. LITERATURE REVIEW

A. Game

The word "Game" often was seen as verb and noun. For verb, it means "playing", close to playing games; for noun, it just means "game" referring to that recreational or educational purpose can be achieved through operation such as operating computer games or ball games. Game that was to be discussed in this study referred to computer game.

Chen (1992) considered that computer games meant software that could be executed in PCs and could be saved in disks or hard disks etc[4]. Computer games could be operated by a person or multiple persons. Wu (1998) regarded that computer games could contain splendid audio and visual effects and abundant contents and they could be recreational or educational in function [5]. Operation methods evolved from keyboard, mouse, and joystick in the earlier times to the current touch interface or somatosensory controller.

B. Application (App)

The word "App" was abbreviated from "Application", meaning "application program" or "application software". This word emerged since the wide popularity of smartphone. Broadly speaking, all types of software in a PC were also App. Nowadays, App generally referred to application programs of smartphones. For different OS, their Apps were incompatible. Currently, smartphone OS included Apple "iOS", Google "Android", Microsoft "Windows Phone", and Black Berry "Black Berry OS"...etc. Each OS had its own selling platform such as iOS "App Store", Android "Google Play", Windows Phone "Windows Phone Store", and Black Berry OS "BlackBerry World" ...etc.

Google Play categorized App into Games and Apps; Games included casual, live wallpaper, educational, trivia, card, casino, racing, arcade, action, and sports; Apps included 26 subcategories such as Action, Adventure, Arcade, Board, Card, Casino, Casual, Educational, Music, Puzzle, Racing, Role Playing, Simulation, Sports, Strategy and Trivia...etc.

C. Unified Theory of Acceptance and Use of Technology (UTAUT)

In the field of Technology Acceptance, many theories originated from the fields of information system, sociology and psychology. In the study of Lu, Lin, Lo and Wu (2012), they generalized these into several schools according to their core concepts or methods after analyzing the current theories on information and technology evaluation. These were five schools including Customer Satisfaction Theory, Behavioral Intention Theory, Structuration Theory, Innovation Diffusion Theory, and Fit Theory as shown in the following table [6].

TABLE I. THEORIES OF INFORMATION SYSTEM RESEARCH

Research Theory	Definition	Information System Model
Customer Satisfaction Theory	Solving causal chain, behavioral intention, users' use behavior and system effectiveness of customer satisfaction	US
		UIS
		EUCS
		ET
Behavioral Intention Theory	Investigating, understanding and predicting users' behaviors in using information system through models that they created	TRA
		TPB
		TAM
		TAM2
Structuration Theory	Investigating individual's activity structures and participation status of social resources and rules in the society	AST
Innovation Diffusion Theory	Investigating social communication issues of information system based on "Innovation Diffusion Theory" proposed by Rogers (1983)	IDT
Fit Theory	Investigating the relationship of the functions of information system and users' performances of their tasks	TTF

Researchers and scholars were challenged with the difficulty of constructing theories or selecting theoretical models. Moreover, plenty of researchers regarded that it was not strong enough to do explanation with only one theory. Therefore, Venkatesh, Morris, Davis and Davis (2003) investigated Technology Acceptance Model thoroughly and proposed "Unified Theory of Acceptance and Use of Technology" (UTAUT) [7]. Their study proved that its explanatory power was higher than 70%, more powerful than the above-mentioned models.

UTAUT was proposed by the scholars of Venkatesh et al. in 2003, a theory integrating eight theories related to technology acceptance in the past including Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Technology Acceptance Model (TAM), Social Cognitive Theory (SCT), Model of PC Utilization (MPCU), Motivational Model (MM), Innovation Diffusion Theory (IDT) and Combined TAM and TPB (C-TAM-TPB).

UTAUT proposed by Venkatesh et al. (2003) mainly included four dimensions and four moderators; these four dimensions were Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions, and they were influenced by four moderators including gender, age, experience and voluntariness of use as shown in the following figure [7].

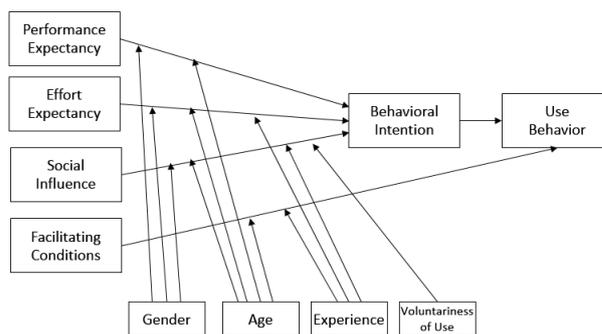


Figure 1. UTAUT Model, Venkatesh et al. (2003)

UTAUT integrated and improved the past technology acceptance models and provided a more complete one to explain users' behavioral intention and use behavior. The empirical studies proved that UTAUT was more powerful to explain them than the others, and this had brought about a great help for the study of technology acceptance model. As a consequence, the researcher of this study used UTAUT as the basis to propose a model and then amend it according to the subject of this study.

D. Price

Price was defined as the amount of money that consumers have to pay for obtaining the goods or services [8]. In other words, it was the cost that consumers have to pay or sacrifice to obtain the goods or services [9]. Therefore, "price" was one critical factor that would affect consumers' purchase intention.

Jacoby & Olson (1977) considered that "Price" could be classified into "objective price" and "perceived price" [10]. Objective price was the actual price of products while perceived price was the price that consumers perceived. Most of them would not remember the actual price that they paid for the goods or services; however, they transferred the actual price into the impression of "cheap" or "expensive" which was easy to remember [9].

From the perspective of economy, higher price could easily have negative influence on purchase intention. Nonetheless, it was found out that "Price" did not cause entirely negative influence in lots of research. For instance, consumers would judge product quality by price and hence the theory of "higher price will lead to more positive influence on purchase behavior" emerged [11]. Price had negative influence on purchase intention; however, quality had positive influence on purchase intention.

Monroe & Krishnan (1985) regarded that "price" was a double index - both product quality and the amount of money that consumers have to pay [12]. Higher price would lead to higher perceived quality, and further purchase intention was also enhanced. Nevertheless, higher price meant that consumers had to pay more money to purchase products, and this would lower their "purchase intention". After summarizing the above literature, the researcher found out that price had direct influence on "purchase intention". Therefore, the researcher added "price" to be one dimension that would affect "purchase intention" in this study.

E. Product Involvement

The concept of "ego-involvement" was first proposed by the scholars of Sherif and Cantril in the study of "social judgment theory" in 1947. It pointed out that each person had different reaction to a certain thing, and when one had higher ego-involvement in something, he or she would not only accept the opinions that agreed with his or hers but also broaden their scope. On the contrary, when one had lower ego-involvement in something, he or she would enlarge its negative aspects or had no opinion at all. Besides, Lastovica & Gardner (1979) considered that different consumers had different levels of involvement in a certain product, and even the same consumer would

have different levels of involvement in different products [13]. It was pointed out that involvement degree was one motivation in consumer behavior in the study of Hawkins and Mothersbaugh (2009), and it was dependent on the interest level that consumers perceived. As they started to perceive that a product would assist them to achieve their expectations, their involvement level would be enhanced [14].

Lots of scholars had proposed different instruments for measuring involvement according to different perspectives. The widely-used one was RPII instrument proposed by Zaichkowsky (1985) and CIP instrument proposed by Laurent & Kapferer (1985) in the academic circle [15-16]. The researcher chose RPII instrument proposed by Zaichkowsky (1985) and adjusted it as the instrument for the questionnaire survey in this study [15].

III. RESEARCH METHOD

The researcher used Unified Theory of Acceptance and Use of Technology (UTAUT) as the theoretical framework to investigate the purchase intention of smartphone users in purchasing game APP, collected data by questionnaire survey and finally conducted the quantitative statistical analysis.

A. Proposed Model and Hypotheses

Unified Theory of Acceptance and Use of Technology (UTAUT) had high explanatory power on users' behavioral intention. However, it was discovered from literature review that many scholars pointed out that it was necessary to extend the theoretical framework according to the research emphasis in different studies. Therefore, the researcher used UTAUT as the theoretical base to investigate the purchase intention of smartphone users in purchasing game APP. Based on the literature review and in order to enhance the explanatory power of UTAUT, and hence the researcher added two variables of "Price" and "Product Involvement". In this study, the researcher investigated the factors that would affect users' purchase of game App, and the researcher regarded that those who would purchase game App were all voluntary, and hence the individual difference of "voluntariness of use" wouldn't be investigated in this study. The model proposed by this study was shown in the following figure.

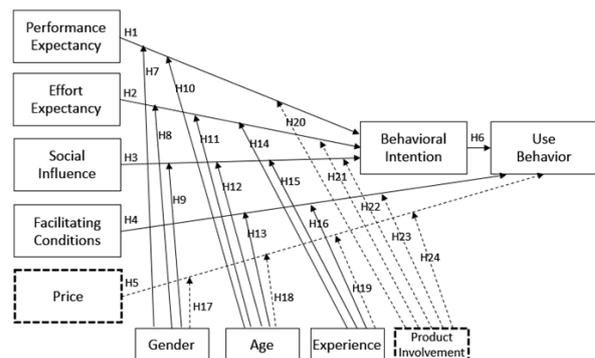


Figure 2. Research framework of the purchase intention for game app

Based on the framework, the researcher proposed the following hypotheses:

H1 : “ Performance Expectancy ” will significantly influence users ’ “ Behavioral Intention ” in using Game App.

H2: “ Effort Expectancy ” will significantly influence users ’ “ Behavioral Intention ” in using Game App.

H3: “ Social Influence ” will significantly influence users ’ “ Behavioral Intention ” in using Game App.

H4 : “ Facilitating Conditions ” will significantly influence users ’ “ Behavioral Intention ” in using Game App.

H5 : “ Price ” will significantly influence users ’ “ Behavioral Intention ” in using Game App.

H6: “ Behavioral Intention ” will significantly influence users ’ “ Purchase Intention ” in using Game App.

H7: “ Gender ” difference will significantly influence users ’ “ Behavioral Intention ” in the dimension of “ Performance Expectancy ” .

H8: “ Gender ” difference will significantly influence users ’ “ Behavioral Intention ” in the dimension of “ Effort Expectancy ” .

H9: “ Gender ” difference will significantly influence users ’ “ Behavioral Intention ” in the dimension of “ Social Influence ” .

H10: “ Age ” difference will significantly influence users ’ “ Behavioral Intention ” in the dimension of “ Performance Expectancy ” .

H11: “ Age ” difference will significantly influence users ’ “ Behavioral Intention ” in the dimension of “ Effort Expectancy ” .

H12: “ Age ” difference will significantly influence users ’ “ Behavioral Intention ” in the dimension of “ Social Influence ” .

H13: “ Age ” difference will significantly influence users ’ “ Purchase Intention ” in the dimension of “ Facilitating Conditions ” .

H14 : “ Experience ” difference will significantly influence users ’ “ Behavioral Intention ” in the dimension of “ Effort Expectancy ” .

H15 : “ Experience ” difference will significantly influence users ’ “ Behavioral Intention ” in the dimension of “ Social Influence ” .

H16 : “ Experience ” difference will significantly influence users ’ “ Purchase Intention ” in the dimension of “ Facilitating Conditions ” .

H17: “ Gender ” difference will significantly influence users ’ “ Purchase Intention ” in the dimension of “ Price ” .

H18: “ Age ” difference will significantly influence users ’ “ Purchase Intention ” in the dimension of “ Price ” .

H19 : “ Experience ” difference will significantly influence users ’ “ Purchase Intention ” in the dimension of “ Price ” .

H20 : “ Product Involvement ” will significantly influence users ’ “ Behavioral Intention ” in the dimension of “ Performance Expectancy ” .

H21 : “ Product Involvement ” will significantly influence users ’ “ Behavioral Intention ” in the dimension of “ Effort Expectancy ” .

H22 : “ Product Involvement ” will significantly influence users ’ “ Behavioral Intention ” in the dimension of “ Social Influence ” .

H23 : “ Product Involvement ” will significantly influence users ’ “ Purchase Intention ” in the dimension of “ Facilitating Conditions ” .

H24 : “ Product Involvement ” will significantly influence users ’ “ Purchase Intention ” in the dimension of “ Price ” .

B. Questionnaire

For the questionnaire, the researcher used questionnaire items of UTAUT proposed by Venkatesh *et al.* (2003), “Perceived Value Theory” proposed by Lichtenstein *et al.* (1993), and “Involvement Theory” proposed by Zaichkowsky (1985) as the basis and adjusted them to fit the subject of this study. The instrument included three parts including [7,15]:

A. User background information: 4 items including gender, age, education level, and experience of using game App.

B. Items related to UTAUT: 24 items (Likert 5-point scale) including those related to performance expectancy, effort expectancy, social influence, facilitating conditions, behavioral intention and purchase intention.

C. Items related to price: 5 items (Likert 5-point scale), according to “Perceived Value Theory” instrument

D. Items related to Product Involvement: 8 items (Likert 5-point scale), according to RPII

The researcher first issued 35 copies of questionnaire as the pre-test to examine its reliability and validity. The Cronbach's Alpha values were all between 0.752 to 0.987, and the reliability value of the questionnaire reached 0.957. Based on previous literature, an item with a reliability value higher than 0.7 was a valid one, and therefore all items of this questionnaire were valid.

IV. RESULTS

A. Participants

The mainstream operating system of smartphone currently included Android, iOS, Microsoft and BlackBerry etc. With the popularity of smartphone, the high coverage of mobile network, and the mature payment mechanism of downloading APP in the market, the researcher mainly selected users of the above-mentioned four smartphone platforms who also used game App as the subjects and then conducted the survey by the on-line questionnaire. The researcher collected totally 318 copies, and 290 copies were valid (response rate 91%). Among them, there were 158 males (54.5%) and 132 females (45.5%). For age, most of them were between 21 to 30

years old (152 persons, 52.4%), and the next group was between 31 to 40 years old (80 persons, 27.6%), between 41 to 50 years old (45 persons, 15.5%), below 20 years old (8 persons, 2.8%), and finally above 51 years old (5 persons, 1.7%). For the experience of using game App, the highest group was the one using game App for 1 to 2 hours on average per day (91 persons, 31.4%), and then was the group using game App for less than an hour on average per day (66 persons, 22.8%), 2 to 3 hours on average per day (60 persons, 20.7%), more than 4 hours on average per day (40 persons, 13.8%), and finally 3 to 4 hours on average per day (33 persons, 11.4%).

B. Path Analysis

The researcher utilized the most widely used “Maximum Likelihood” (ML) in “Structural Equation Model” (SEM) to evaluate each variable, observe overall model fit and the causal relationship among each dimension in order to evaluate whether it had sufficient explanatory power to validate the proposed model. Through the overall model fit analysis, the chi-square value of the theoretical framework of this study was 509.152, χ/df was 1.943, and p value was 0.000 (significant). The absolute fit index, incremental fit index and parsimonious fit index all reached the level of fit and acceptable fit, and this showed that this study had met the standard of acceptable model fit.

For the results of path analysis on the model, five path coefficients reached the level of significance among the dimensions of “Performance Expectancy”, “Effort Expectancy”, “Social Influence”, “Facilitating Conditions”, “Price”, “Behavioral Intention” and “Purchase Intention” as Table II showed.

TABLE II. FIVE PATH COEFFICIENTS REACHED THE LEVEL OF SIGNIFICANCE

Path of Causal Relationship	Standardized Coefficient	T Value	Significance
Performance Expectancy → Behavioral Intention	0.72	10.127	***
Effort Expectancy → Behavioral Intention	0.09	1.740	0.082
Social Influence → Behavioral Intention	0.34	4.571	***
Facilitating Conditions → Purchase Intention	0.39	4.105	***
Price → Purchase Intention	0.37	3.921	***
Behavioral Intention → Purchase Intention	0.51	8.089	***

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

For the overall path analysis results of the model, among the dimensions of performance expectancy, effort expectancy, social influence, facilitating conditions, price, behavioral intention and purchase intention, the path coefficient of effort expectancy and behavioral intention did not reach significant level; however, the other five path coefficients reached significant level.

C. Moderator Analysis

1. Gender interference: The researcher used T-test to test the influence of gender on performance expectancy, effort expectancy, social influence and price; the result indicated that gender had no significant influence on these four dimensions ($0.128 < p < 0.962$).

2. Age interference: The researcher used one-way ANOVA and discovered that users of different age groups had significant differences in the dimensions of performance expectancy, effort expectancy, social influence, facilitating conditions and price; this showed that age had influences on behavioral intention and purchase intention in the dimensions of performance expectancy, effort expectancy, social influence, facilitating conditions and price ($0.000 < p < 0.056$).

3. Experience interference: The researcher used one-way ANOVA and found out that experience had no significant influence on effort expectancy but users of different experience groups had significant differences in behavioral intention and purchase intention from the dimensions of social influence, facilitating conditions and price ($p < 0.000$).

4. Product involvement interference: The researcher used one-way ANOVA and found out that product involvement had influenced behavioral intention from the dimensions of performance expectancy and social influence, and facilitating conditions and price had influenced purchase intention. However, it didn’t prove that product involvement would influence behavioral intention from the dimension of effort expectancy.

The following figure showed the overall model proposed by this study.

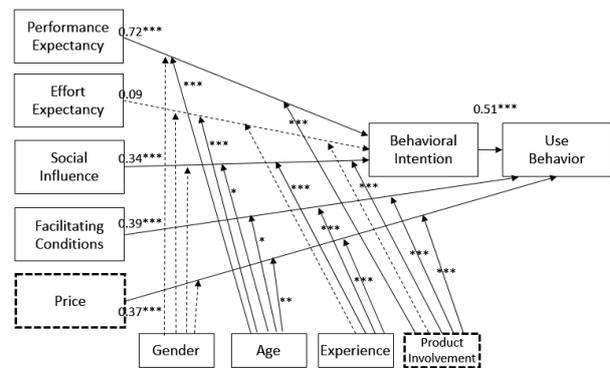


Figure 3. The analysis results of the model proposed by this study

V. DISCUSSION AND CONCLUSION

Due to the increasing popularity of smartphone, the development of App has also turned into a critical item in the technology industry. With the rapid boom of mobile App, mobile game App has become the App type producing the most downloading quantity and the highest revenue in the App market, and moreover it has penetrated into many people’s lives. The purpose of this study was to understand the factors influencing users’ purchase intention of mobile game App who played game App. The researcher utilized UTAUT as the basis to propose a model and added the dimensions and moderators of “Price” and “Product Involvement” to extend the model.

The results indicated that most of the hypotheses in the proposed model were valid and it is the same with researches before; however, “Effort Expectancy” had no significant influence on users’ “Behavioral Intention” in using game App, and “Experience” and “Product

Involvement” differences had no significant influence on their “Behavioral Intention” in the dimension of “Effort Expectancy”. The possible reasons may include that for App developers the first goal was to make user-friendly and easy-to-operate App on small screen devices and that users have become used to easy App operating model due to the current popularity of smartphone and therefore they were highly confident in using App. As a consequence, the above-mentioned hypotheses were not valid in this study. The gender is not the significant moderator in this research result. The reason maybe is the smartphone users had basically skill to use these Apps, however, it is not dependence on gender.

From the perspective of information system design, recreation expectancy of using game App and social influence had highly significant explanatory power to predict “Behavioral Intention” in using game App; using helpful services of game App and its price had highly significant explanatory power to predict “Purchase Intention”. Therefore, the researcher suggested that good services and attractive price of game App should be considered as critical factors that would influence users as they chose game App although the recreational experiences of audio and visual effects were important. Finally, it was expected that the results of this study could offer significant references for future scholars and developers of mobile game App as they do related researches, develop new products and evaluate future market.

REFERENCE

[1] IDC. (November 2013). Smartphone shipments to surpass 1 billion units in 2013, up 39.3% as average prices decline 12.8%. [Online]. Available: <http://thenextweb.com/insider/2013/11/26/idc-smartphone-shipments-surpass-1-billion-units-2013-39-3-growth-average-prices-decline-12-8/>

[2] Gartner. (August 2013). Gartner Says Smartphone Sales Grew 46.5 Percent in Second Quarter of 2013 and Exceeded Feature Phone Sales for First Time. [Online]. Available: <http://www.gartner.com/newsroom/id/2573415>

[3] Google. (May 2013). Google Play In-App Purchase Revenue Growth Jumps 7X In One Year, Subscription Revenue Growing 2X Each Quarter. [Online]. Available: <http://techcrunch.com/2013/05/17/google-play-in-app-purchase-revenue-growth-jumps-7x-in-one-year-subscription-revenue-growing-2x-each-quarter/>

[4] W. C. Chen, “Modern history of computer games and market status,” *I-Tain Magazine*, vol. 54, pp. 48-72, 1992.

[5] T. H. Wu, “The impact of computer software to bring the game,” *3rd Magazine*, vol. 66, pp. 64-71, 1988.

[6] H. K. Lu, P. C. Lin, C. H. Lo, and M. Y. Wu, “A review of information system evaluation methods,” *International Proceedings of Computer Science and Information Technology*, vol. 41, pp.243-248, 2012

[7] V. Viswanath, M. G. Morris, G. B. Davis, and F. D. Davis, “User acceptance of information technology: Toward a unified view,” *Mis Quarterly*, pp.425-478, 2003

[8] D. Hawkins and D. Mothersbaugh, *Consumer Behavior Building Marketing Strategy*, McGraw-Hill, 2009.

[9] V. A. Zeithaml, “Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence,” *The Journal of Marketing*, pp. 2-22., 1988.

[10] J. Jacoby and J. C. Olson, “Consumer response to price: An attitudinal, information processing perspective,” *Moving ahead with Attitude Research*, vol. 39, no. 1, pp. 73-97, 1977.

[11] D. R. Lichtenstein, N. M. Ridgway, and R. G. Netemeyer, “Price perceptions and consumer shopping behavior: A field study,” *Journal of Marketing Research*, pp. 234-245, 1993.

[12] K. B. Monroe and R. Krishnan, “The effect of price on subjective product evaluations,” *Perceived Quality*, vol. 1, pp. 209-232, 1985.

[13] P. H. Bloch, “An exploration into the scaling of consumers' involvement with a product class,” *Advances in Consumer Research*, vol. 8, no. 1, pp. 61-65, 1981.

[14] D. Hawkins and D. Mothersbaugh, *Consumer Behavior Building Marketing Strategy*, McGraw-Hill, 2009.

[15] J. L. Zaichkowsky, “Measuring the involvement construct,” *Journal of Computer Research*, vol. 12, pp. 341-352, 1985.

[16] G. Laurent and J. N. Kapferer, “Measuring consumer involvement profiles,” *Journal of Marketing Research*, vol. 22, pp. 41-53, 1985.



Hsin-Ke LU is the Director of Information Management (Master Programs for Working Learners) and the CEO of School of Continuing Education at Chinese Culture University in Taiwan. He is the Chairman of the Association of Continuing Education of Colleges and Universities in Taiwan and the Chairman of Cisco Networking Academy. He is also a holder of Open Group Certification for Enterprise Architecture and Certification

in the Governance of Enterprise IT. His academic interests focus on e-learning, corporate structure, lifelong learning, and information system planning (Enterprise Architecture).



Peng-Chun LIN is an Assistant Professor of Department of Information Management in Chinese Culture University and the Ph.D. candidate of Information Education Research Institute of National Taiwan Normal University. She is also the Chief Officer of the International Information Certification Cooperation Center at Chinese Culture University in Taiwan. Her academic interests focus on e-learning, network community development, application of simulation

learning and recently on optimal network management and corporate structure.



Yi-Chen Lin is a graduate student of the department of information management, Chinese Culture University. Meanwhile he secured his job in Chunghwa Telecom as a software engineer responsible for deploying of web design and web programming. His research field lies in the analysis of information systems development and user behavior.