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# FACTORS INFLUENCING CONSUMPTION EXPERIENCE OF MOBILE DEVICE: A STUDY FROM EXPERIENTIAL VIEW

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## Abstract

Among the large number of studies on adoption of mobile commerce, the major research perspective is the utilitarian factors. In this study, we interpreted consumers' consumption experience of handphoned from an experiential view of the intervening response system which focuses on hedonic factors of customers. We studied the following research questions. First, whether hedonic factors (e.g. subjective norms) and utilitarian factors (e.g. convenience), are positively related to emotional factors. Second, whether emotional factors are positively related to customers' consumption experience of mobile device. A survey study was conducted to collect data from 293 mobile phone users. The results of this research implied that hedonic factors performed a positive effect on the consumption experience, while the utilitarian factors had a negative effect on the consumption experience of consumers.

**Keywords:** Hedonic, Intervening Response System, Consumption Experience, Experiential View, Mobile Device

## Introduction

Mobile phones provide us not only an easier way of communication but also make our lives more colorful. More and more people start using mobile devices. It is estimated that the mobile phone sales will reach at least 300,000,000 U.S. dollars in 2009. After researched among the customers, Authen Tec found that, 58% of the respondents have purchased the mobile phones with the functions of m-bank and other m-services. 74% of the respondents were planning to receive the m-services by mobile phones. And the percentage of the respondents who have the plan to upgrade their mobile phones to meet the m-services is 30%. The market of mobile data services has been growing rapidly in both the users' quantity and the profit. According to A.C. Nielsen's report, the global mobile services have achieved a profit of about 20 billion in 2008 and the demand of mobile communication services will reach 57.5 billion U.S. dollars in China in the following three years. A high-speed growth and lucrative market will inevitably bring about the

fierce competition. In this situation, an effective and essential method is to study the consumer behavior and analyze their willingness and preference, which is the only way for a company to thrive in a fierce market competition.

Nowadays, mobile phone is more than a verbal system, but a tiny computer or a combination of entertainments. More and more customizing and humane factors are put into mobile device design, contributing to consumers' optimum subjective experience. The success of Ipod tells us that customers care about not just function. Whether those personal electronic devices can bring happiness and joyfulness may be equally important or even more.

The purpose of this paper is to explore the effects of hedonic factors on customer consumption experience (mobile commerce usage intention, adoption, and satisfaction) in the context of mobile device usage from the perspective of experiential view of the intervening response system. The study addresses questions as follows: (1) do the hedonic factors influence customers' emotion with their mobile devices; (2) how do the hedonic factors influence their emotional states; (3) how does the emotion of customers influence their behavior towards mobile devices?

## Literature Review

Among the large number of studies on adoption of mobile commerce, the major research perspective is the utilitarian factors which caused the application of m-commerce. Davis' Technology Acceptance Model (TAM) [9] has been widely cited as a framework for explaining users' IT adoption and usage in multiple contexts, say that researches on m-commerce application and environmental factors [29]. Previous IT adoption literatures have focused on general technology perceptions, the direct adoption drivers, namely perceived usefulness (PU) and perceived ease of use (PEU), and its antecedent variables, or external variables, the indirect adoption drivers.

New factors were added to enhance the explanatory power of the variance in users' behavioral intention related to IT adoption. In a research concerning financial problems of mobile application, Luarn and Lin extended the TAM by

new factors of trust, self-efficacy and transaction cost, which involved individual differences into the classification of external variables [22]. Dickinger, Arami, and Meyer added perceived enjoyment and social norm, the two important antecedents for the adoption of technology with network externalities, into TAM [10]. The model extension provides us a wider sets of adoption drivers, including general technology perceptions [15], individual differences (self-efficacy) [21] [22] [24], user psychographics (e.g. perceived enjoyment) [15], social influence (e.g. social norm) [10] [15] [21] and demographics (e.g. gender and age) [16]. In addition, system quality is also established to have a causal relationship with adoption of m-commerce [18].

Nevertheless, most of the aforementioned studies are conducted under the context of workplace system. In contrast, mobile devices and some mobile services are closely related to customers' personal life. Mahatanankoon found that motivational, situational, and psychological factors could influence personal services such as mobile SMS use experience [24]. The mobile device using behavior cannot be fully determined by utilitarian values.

Therefore, a number of researchers studied IT adoption in settings other than the workplace in recent years. Two new factors, visual orientation and fun, are added into TAM by Bruner and Kumar [4], which can help the researchers to forecast the willingness of the customers whether they are interested in participating in m-commerce. Lu, Yu, Liu, and Yao added technology complexity, trust, individual differences, social influences and facilitating conditions into TAM to explain the consumer willingness of mobile Internet users [21]. Nysveen, Pedersen, and Thorbjornsen have conducted a study on the determinants of consumer adoption willingness of mobile phone text message, mobile contact, mobile payment, mobile games and other mobile applications [26]. The established factors are perceived enjoyment, perceived usefulness and perceived expressiveness [26]. From a non-TAM perspective, Mahatanankoon examined the effects of personality traits (individual playfulness, personal innovativeness) and optimum stimulation level (OSL) on text-messaging activities and m-commerce intention [24]. The findings implied that personality traits mediated by OSL can be applied to study IT-based adoption behaviors [24].

Prior literatures have examined the contribution of motivational, situational, and psychological factors towards IT adoption in non-work settings, where IT was not been regarded as a tool to improve task performance. A generally accepted view is that, in order to get an understanding of consumer willingness of

m-commerce adoption, researchers need to start with the emotional and cognitive perspective related to the social and cultural background of individuals [28]. For example, as "cool" feature becomes one of the vital considerations when using mobile device, many people prefer iPod to other mp4 players, which are more powerful, long lasting, and having larger capacity. As it were, iPod is successful for its concise design and its culture, which symbolizes innovation and rebellion.

Although most studies were conducted from the utilitarian perspective and not free from the conventional performance conception of IT use, in m-commerce, consumption experience is more vital than product itself. Internal imagery and emotions can be aroused by external multiple sensory modalities including sounds, tactile impressions and visual images [13]. From a hedonic perspective, Holbrook and Hirschman have introduced, defined and linked constructs of multisensory experience, fantasy imagery and emotive response to various consumption processes [14]. Therefore, aside from the benefits of utilitarian response, such as perceived usefulness and perceived ease of use, other hedonic factors, such as subjective and perceived experience, could determine consumers' usage patterns [24].

In the context of shopping, Park, Kim and Forney explored the causal relationships among fashion involvement, positive emotion, hedonic consumption tendency and fashion-oriented impulse buying [27]. The study showed that Fashion involvement and positive emotion have positive effects on consumers' fashion-oriented impulse buying behavior with Hedonic consumption tendency being an important mediator. More hedonic consumers (typically younger people with lower income or lower education level) tend to seek excitement experiences during leisure time, in the context of internet bank service, and personality is emphasized when consumers concern more about playful and entertaining service features [23].

In conclusion, in the context of m-commerce, where wonderful consumption experience is demanded and network externality exists, hedonic factors could be vital antecedents for the IT usage. Having examined previous literatures, we focus on four sets of usage drivers: individual differences (self-efficacy), user psychographics (e.g. emotion), social influence (e.g. subjective norm) and system quality (e.g. media richness and convenience). The objectives of this study are to understand the factors affecting users' consumption experience of mobile device and to analyze the relationships among these factors.

### **Intervening Response System**

The need of understanding consumers' consumption experience from emotional perspectives leads us to the intervening response system. Within the field of consumer behavior study, intervening response system was widely used, which defines individual's services or products usage as a process involving individual's cognition, affect, and behaviors. Individual mobile device usage can be defined as an individual's cognition, affect, and behavior [5]. The intervening response system is understood from two perspectives: information process view and experiential view. The former is more about rational choice and the latter is more about irrational buying needs [14]. Information processing model regards consumers as a goal-oriented logical thinker and emphasize the utilitarian value of consumption [14]. Recent studies on information system have shown the information processing model neglects several important consumption phenomena, including

enjoyment, playfulness, excitement etc. [23] [24] [27]. Laukkanen and Lauronen regarded consumers' utility as subjective consumption that tried to seek "satisfying experiences instead of pure products" [19]. Since mobile device may be used both functionally and hedonically, we explore user behavior in relation to hedonic consumption. Therefore, it is necessary to understand the intervening response system from the perspective of experiential view which puts more emphasis on hedonic factors when we want to study customers' mobile device usage.

From an experiential perspective, Holbrook and Hirschman involve the fantasies, feelings, and fun into intervening response system [14]. The contrast between information processing and experiential view on intervening response system is shown in Figure 1.

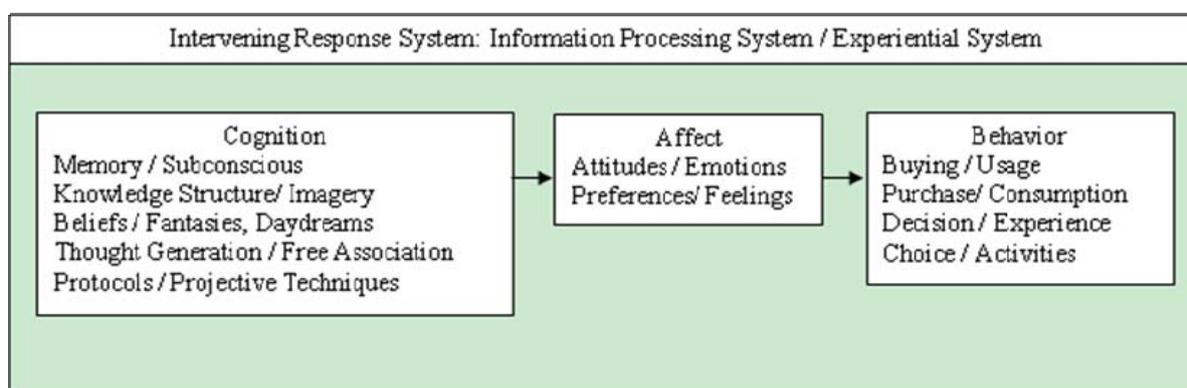


Figure 1. Intervening Response System, adopted from Holbrook and Hirschman [14]

Note: The slash marks indicate a comparison between the information processing perspective (left side) and the experiential view (right side).

The experiential view emphasizes the recognition of symbolic meanings, hedonic responses, and esthetic criteria when explaining consumer behaviors [14]. Cognition refers to "the mental functions, or mental processes" (e.g. comprehension, inference, decision-making, planning and learning), such as level of attention. The experiential view focuses on cognitive process at a more subconscious and private level [14].

Affect is defined as "the experience of feeling or emotion" [15] (e.g. level of anxiety) and thought to be based on a prior cognitive process [20]. An affective reaction, such as liking, disliking, or the experience of pleasure or displeasure, is elicited after a certain amount of cognitive processing of information has been accomplished [3]. Apart from the attitude (like or dislike of a particular brand) and the preference (the rank relative to other brands), which are emphasized in the information processing perspective, diverse emotions like love, hate, fear, joy, boredom, anxiety, pride, anger, disgust, sadness,

sympathy, lust etc. also play an important role as aspect of affect [14]. Consumers' affective states (e.g. pleasure) can influence the intention to use product or the experience on using. People tend to do repeat behaviors from their past positive experience, thus, if they gains positive affect from mobile service, users will intend to use the service continuously and more frequently.

In the area of behavior, the experiential view emphasizes the mental events surrounding the act of consumption, that is, experience. Behavior is defined as "the users' observable actions" [5], such as the activities they participate. The entertaining-, arts-, and leisure- related offerings of mobile service call attention to the experiences when actually consuming it [14].

### Research Model and Hypotheses

Using mobile device is often determined by situational and psychological factors, which stimulates emotion and then raises the satisfaction of

mobile device usage or motivates the intention to use. The intervening response system suggests that consumers' behaviors are influenced by both their experience with the environmental factors and their inputs to the environments [14]. The environmental factors can be studied from two aspects: system quality and social influence [10] [18] [21]. On the other hand, consumers' inputs are factors that determine one's consumption view that influences their intervening response system [14]. It has five dimensions: (1) Resource (e.g. time); (2) Task definition (e.g. hedonic response); (3) Type of involvement (e.g. orientation reaction); (4) Search activity (e.g. exploratory); (5) Individual differences (e.g. personality, religion) [14]. Among those dimensions, previous investigation on individual differences has shown its essential contribution to explain or predict consumer behavior [21] [22] [24]. Therefore we focus on individual differences to study the effect of consumers' inputs.

In the context of m-commerce, system quality can be understood from the angle of how well handphones can facilitate consumers to do what they want. It was discovered that factors such as perceived convenience has significant effect on customers' decision calculus in on-line repurchases, being moderated by transaction experience [12]. Greater convenience means user could spend less time and effort to gain more utility during usage [12]. Convenience can be defined as consumers' perceptions of the time and effort involved in using the mobile device [2]. It is reasonable to assume that for the same service, customers would prefer whichever mobile device offers the greater convenience. Using mobile device costs users' mental and physical energy, such as operating keypad, and surfing a mobile website. If the keypad is insensitive or the website is very slow, users may feel impatient or even annoyed. Emotions, like pleasure, will increase when time and effort are saved. Therefore, in this study, we include convenience in our model, which is expected to bring great positive effect on feeling and emotion towards mobile device.

*H1. Convenience has a positive effect on emotion during mobile device usage.*

One advantage of mobile phone is that it enables people to communicate over long distance in various ways (e.g. voice call, E-mail, text message). Users can freely choose communication way in desired degree of media richness, which may have different impacts on the users' perception, appreciation, or level of satisfaction [25]. In situations that messages containing equivocality, it is important to use richer communications media [7], such as video call. While leaner media types can sometimes offer more efficiency than richer ones, in situations that messages were unequivocal [7], such as text message. Therefore, one should choose the

media type that offers the greatest efficiency and the greatest opportunity for the intended message to be conveyed accurately [6]. Thus, users could well transmit their information, including feelings and emotions, via mobile phone and get appropriate feedback mutually.

When studying consumers' consumption experience of mobile phone, we cannot ignore that unique feature of mobile phones. Therefore, we included media richness as another factor examining system quality. Media richness is defined as the ability of a medium to carry information [30]. According to Daft and Lengel's theory, media richness is the ability of the media to, (1) relay immediate feedback, (2) provide feedback cues such as body language, (3) allow the message to be created or altered specifically for an intended recipient, and (4) transmit the feelings or emotions of the communicators [7]. From the definition, it can be observed that media richness is different from convenience in that the latter is from a utilitarian perspective while the former reflects more feelings and emotions of consumers. New technology on mobility brings impacts on the quality or nature of communications between people, which enriches their mobile life and increase pleasure and excitement during usage. In this study, media richness is expected to be one of the hedonic factors preceding the emotion.

*H2. Media richness has a positive effect on emotion during mobile device usage.*

As to the aspect of social influence, according to the Theory of Planned Behavior (TPB), subjective norm is included as a determinant of behavioral intention, as well as attitude, and perceived behavioral components [29]. By examining students' usage of a computing resource facility over a period of time, Taylor and Todd find subjective norm has a significant influence on behavioral intention [29]. Subjective norm is defined as the person's perception that relevant individuals or groups think he should perform or not perform a behavior [11]. An individual may gain a satisfying experience if his/her friends think his/her handheld phone suits him/her. Comparing to TAM, TPB emphasizes the power of subjective norms. It maintains people in a society would be affected by other groups, especially the crucial mass. In the context of WAP services, Hung and Chang proposed a model comparison among three competing theoretical models (TAM, TPB, Decomposed TPB model) for explaining user acceptance [17]. The study found TPB and decomposed TPB were superior to TAM in terms of their ability to explain user acceptance of WAP services, and the actual use of WAP services was determined mainly by attitude and subjective norm rather than perceived behavioral control when applying TPB [17].

Previous studies usually regard subjective norm as a utilitarian factor, which affects people's attitude, thus affects their behavioral intention. However, with highly interactive services like m-commerce, subjective norm is an essential determinant of perceived enjoyment due to network effects [10]. From an experiential view, this study desires subjective norm to be a hedonic factor, which could affect their consumption experience after through actual use. It is more enjoyable to use mobile phone if most of one's friends are also available via mobile phone.

*H3. Subjective norms have a positive effect on emotion during mobile device usage.*

In terms of individual difference, one of the variables received researchers' attention is self-efficacy. Luarn and Lin studied the relationship between self-efficacy and individual response to information technology [22]. According to Bandura's Social Cognitive Theory, self-efficacy is defined as the belief that one is capable of succeeding in attaining certain goals [1]. Self-efficacy is believed to affect one's thought patterns and emotional reactions, especially to regulate emotional states when experiencing in threatening or difficult situations [1]. Users with higher self-efficacy tend to experience more kinds of communication media and function, while users with lower self-efficacy may be confined in few operations. The more mobile service users experience, the more fun and sense of satisfaction they're likely to have. Empirical evidence of a causal link between self-efficacy and behavioral intention, which is mediated by perceived ease of use and perceived usefulness, has shown in context of wireless finance [22] and WAP services [17]. Therefore, self-efficacy is involved into our study to explain the usage of

technology or intention to use.

*H4. Self-efficacy has a positive effect on emotion during mobile device usage.*

Consumption emotion refers to "a set of emotional response elicited specially during product usage or consumption experience" [12]. Evidence shows emotion has an important role in the adoption and usage of technology. With network externalities, perceived enjoyment is an important antecedent for the adoption of technology [10]. Individual playfulness has a positive effect on the individual's OSL and exploratory usages of mobile devices [24]. Wakefield R. L. and Whitten D. found that playfulness will generate positive feelings that drive usage behavior [32]. Consequently, previous literature has provided the theoretical and empirical support for relationship between emotion and consumption experience.

*H5. Emotion has a positive effect on consumption experience.*

Applying the intervening response system from the perspective of experiential view shown in the Figure 1, the research model depicted in Figure 2 is developed to examine several utilitarian and hedonic factors toward consumption experience. It illustrates the relationships among six variables (Convenience, media richness, subjective norms, self-efficacy, emotion, and consumption experience) in a mobile commerce context.

In this model, emotion is assumed to be influenced by convenience (H1), media richness (H2), subjective norms (H3), self-efficacy (H4). In addition, emotion is assumed to influence consumption experience (H5). Estimates for the structural model for consumption experience were based on five hypotheses.

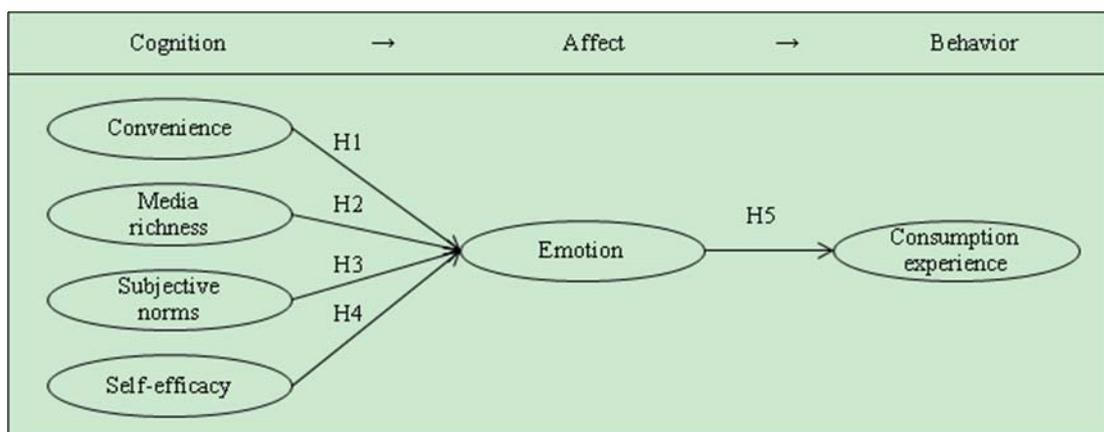


Figure 2. Research model

## Methodology

## Measurements

The self-administered questionnaire included six

variables. The survey instrument was developed by adopting existing validated questions wherever possible. Some items were self-developed for more accurate fit between the instrument and the context of the research. Five items for convenience were adopted from Gupta and Kim [12]. Three items for media richness were adopted from Daft and Lengel [8]. Four items for subjective norms were adopted from Hung and Chang [17]. Three items for self-efficacy were adopted from Luarn and Lin [22] and from Hung and Chang [17]. Five items for emotion were adopted from Voss, Spangenberg, and Grohmann [31]. According to Holbrook and Hirschman, consumption experience was consisted of three aspects: intention to use, activities involved in consumption, and mental events surrounding the act of consumption [14], thus four items was developed, such as "I want use this cell phone more frequently". The variables were measured on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

### Sampling and Data Collection

The sample was 90% college students at one university in a southeast city in China and 10 percent people-at-work aged 25 to 35. The questionnaire was administered in study classrooms, library or via e-mail. Usable data were obtained from 293 respondents who represented 51 percent female and 49 percent male people.

### Data Analysis

The measurement model and structural model was examined by LISREL 8.7. The measurement model assessed how the latent variables (Convenience, media richness, subjective norms, self-efficacy,

emotion, and consumption experience) were measured for the observed indicators (e.g. CVN, MDR, SN, SFE, EM, and BH). The structural model applied the relationships among these latent variables to test the hypothesis (See Figure 2). The overall fit of the model was assessed by root mean square error of approximation (RMSEA), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), normed fit index (NFI), incremental fit index (IFI), and the non-normed fit index (NNFI).

## Results

### Measurement Model

In the structural model presented in Figure 2, there are one exogenous variable – consumption experience (BH) – and five endogenous variables – convenience (CVN), media richness (MDR), subjective norms (SCN), self-efficacy (SFE), and emotion (EM).

The estimated measurement model presented in Table 1 consisted of five observed variables (EM1, EM2, EM3, EM4, EM5) for emotion, four observed variables (BH1, BH2, BH3, BH4) for consumption experience, five observed variables (CVN1, CVN2, CVN3, CVN4, CVN5) for convenience, three observed variables (MDR1, MDR2, MDR3) for media richness, three observed variables (SFE1, SFE2, SFE3) for self-efficacy, and four observed variables (SCN1, SCN2, SCN3, SCN4) for subjective norms. Overall, the coefficients of factor loading on the latent constructs ranged from 0.44 to 0.76 and all paths were significant. Besides, error variances of all constructs were positive, suggesting a good preliminary fit of the measurement (See Table 1).

Item	Emotion					Consumption experience			
	EM1	EM2	EM3	EM4	EM5	BH1	BH2	BH3	BH4
Loading	0.58	0.64	0.56	0.72	0.56	0.51	0.51	0.67	0.66
Error Variance	0.3	0.19	0.24	0.14	0.19	0.34	0.34	0.27	0.27

Item	Convenience					Media richness		
	CVN1	CVN 2	CVN 3	CVN 4	CVN 5	MDR1	MDR2	MDR3
Loading	0.48	0.44	0.7	0.67	0.61	0.57	0.63	0.48
Error Variance	0.43	0.56	0.16	0.14	0.17	0.2	0.19	0.28

Item	Self-efficacy			Subjective norm			
	SFE1	SFE 2	SFE 3	SCN1	SCN2	SCN3	SCN4
Loading	0.65	0.76	0.67	0.6	0.62	0.67	0.67
Error Variance	0.28	0.07	0.14	0.33	0.3	0.19	0.26

Table 1. Items Loading and Error Variance

The reliabilities of each latent variable and overall measurement were measured by Cronbach's Alpha. The Cronbach's Alpha of the latent variables ranged from 0.808 to 0.911 with an overall Alpha being 0.959 and exceed the suggested minimum cut-off of 0.7. Confirmatory factor shows good fit between the data and the construct of scale. The composite reliability (CR) from all the constructs ranged from 0.808 to 0.898, exceeding the

recommended 0.8 criterion. The average variance extracted (AVE) of each latent factor ranged from 0.535 to 0.747, more than the recommended value of 0.5, suggesting that the constructs are distinct. Besides, the  $\chi^2/df$  was 1.37 and the RMSEA was 0.034, being below the desired maximum cut-off of 2 and 0.08 respectively (See Table 2). Accordingly, the measurement model was valid and reliable.

Item	Emotion	Consumption experience	Convenience	Media richness	Self-efficacy	Subjective norm	Whole measurement
Cronbach's Alpha	0.911	0.808	0.887	0.821	0.916	0.885	0.959
CR	0.898	0.819	0.852	0.808	0.898	0.858	$\chi^2/df = 1.37$ RMSEA=0.034
AVE	0.641	0.535	0.543	0.587	0.747	0.603	

Table 2. Reliability and Validity

### Structural Model

The fit indices for the mobile device user structural model suggested an excellent fit. The RMSEA was 0.043, lower than the maximum desired cut-off of 0.05. The 90 percent confidence interval for RMSEA was 0.052, being below the desired maximum cut-off of 0.08. The p-value for test of close fit (RMSEA < 0.05) was 0.90, higher than the desired minimum cut-off of 0.50. The GFI was 0.91, and the AGFI was 0.88, both of which were above the recommended thresholds of 0.9 and 0.8 respectively. The other fit indices were all satisfactory: the CFI = 0.98, the NFI = 0.95, the IFI = 0.98 and the NNFI = 0.98. Consequently, these results indicated that the structural model shown in Figure 3 adequately fitted the data.

The results confirmed the interrelationship among the six variables. This study found that the utilitarian factors, that is, convenience (H1), and self-efficacy (H4) had negative effects on emotion, while the hedonic factors, subjective norms (H3), and media richness (H2) had significant positive effects on emotion, which explains 52 percent of the

variance. Emotion (H5) had significant positive effects on consumption experience explaining 47 percent of the variance. In addition, convenience, media richness, subjective norms, and self-efficacy had significant effects on consumption experience, explaining 24 percent of the variance (See Figure 3).

### Discussion

H1 was not supported. Convenience had a negative effect on emotion during mobile device usage and the effect is not significant. The result did not support a notion that mobile device user with high perception of convenience will generate more positive emotion. The reason may be that people will spend more effort and time in mobile commerce for the purpose of leisure or communication, and people appeal to personal space. Although mobile device enables people to contact others at will, people could be disturbed or bothered in any place or time. However, the negative effect of convenience on consumption experience is not significant, suggesting users are

likely to develop a perception of convenience and are used to these situations. Therefore, user's perception of convenience is not important in affecting their

hedonic experience.

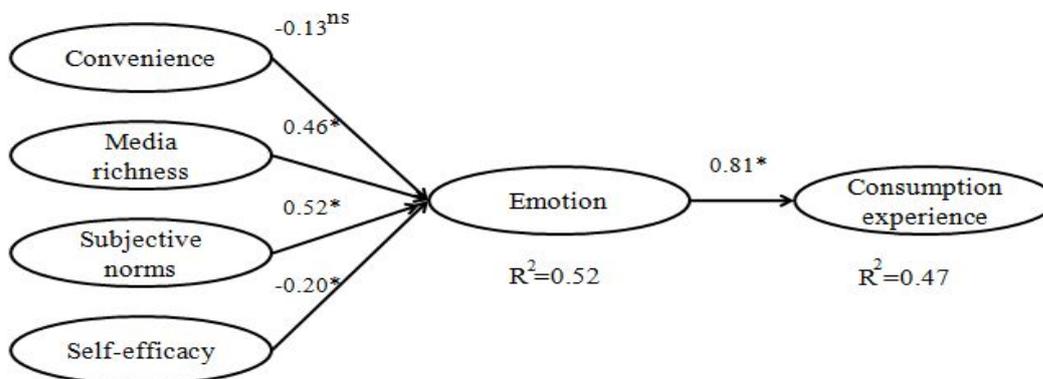


Figure 3. Structural Model for consumption experience

Notes: RMSEA = 0.043, GFI = 0.91, AGFI = 0.88, NFI = 0.95, NNFI = 0.98, CFI = 0.98, IFI = 0.98, ns = not significant, \*  $p < 0.01$ .

H2 was supported. The results showed media richness had a significant positive effect on consumption experience directly. Daft and Lengel reported that performance improves when team members choose proper media in different situations [7]. As the 3G era, people are able to have face to face talking in different areas and choose from communication media with desired degree of information richness. Therefore, feelings and emotions can be conveyed passing the space, as well as information. Not only the adoption of new media, but also the rich kinds of communication tools can generate excitement and joy during usage. This implied that media richness is a hedonic factor that influences consumers' behavior.

H3 was supported. Subjective norms had a significant positive effect on emotion during mobile device usage. Due to the network effect, mobile service can be successful when a mass of people using it and become more enjoyable to individuals [10]. Mobile device users who received more recognition and support on using mobile device were more likely to gain positive emotion and willingness to use mobile device more frequently. When choosing the mobile devices, the customers are supposed to prefer the devices with high reputation and social acceptance. And the existing users may abandon the certain mobile devices if they find it is out of endorsement. Therefore, this finding implied that mobile device as an experiential product plays an important role in fulfilling people's hedonic needs.

H4 was not supported. Self-efficacy had a significant negative effect on emotion during mobile device usage. It may be that users with higher self-efficacy felt less excited if there was inadequate

challenge for them. Furthermore, self-efficacy was more likely to increase users' positive emotional states if mobile device could put their curiosity and mind to good use. This supports the significant effect of self-efficacy on user' hedonic response and the finding suggested involving more challenging functions into design.

H5 was supported. Emotion had a significant positive effect on consumption experience during mobile device usage. Users with positive emotion, such as being satisfied and excited, were more likely to use mobile device and increased the activities on mobile device using and mobile commerce. Therefore, the finding suggested that emotion played an important role in experiencing mobile device usage. Consumers were more willing to adopt mobile commerce when hedonic needs were satisfied.

In conclusion, this study has three major implications, that is, regarding the mobile device usage as a hedonic experience, examining the effect of media richness, and confirming the impact of user's psychographics. To begin with, the results suggest the behavioral factor (e.g. consumption experience) is strongly determined by the affective factor (e.g. emotion) during mobile device usage; whereas the cognitive factors (e.g. subjective norm, self-efficacy, and media richness) have significant partial effect, respectively. In this study, the high model fitness indicated our model based on the intervening response system from an experiential view for explanation of consumers' behavior is valid and meaningful. It was interesting to find that, among cognitive factors, the hedonic factors are positive related to emotion, thus to effect consumption experience, whereas the utilitarian factors are

negative related. In other words, traditional utilitarian factors may not apply in the context of personal mobile devices and researchers should pay more attention to the influence of hedonic factors on consumers' behavior.

Furthermore, advancing technologies enable people to convey message from text message to video call, which makes media richness an important antecedent in explanation for mobile phone use. Finally, users' psychographics, which reflect subjective experience and personal value, plays a strong role on effecting consumption experience. Similar results have been found in a recent IT adoption study from hedonic perspective [10]. The main driver of intention to use is perceived enjoyment, whereas perceived enjoyment and usefulness have significant effect on attitude.

Besides the implications on research, the study yields a number of important practical managerial implications, which both in service and product design and customer relationship management (CRM). First, the factors which are the antecedents of emotion and consumption experience can help the companies offering mobile device or service to find the proper and effective design avenue. When doing a survey before product design, researches should be taken within the target market, since the advices from customers' social network are taken significantly. A wide variety of media and more challenging functions should be concluded in the mobile device and service.

The second implication for this study in mobile commerce industry is the emphasis of CRM. As the network effect plays a significant role in mobile service, companies should develop a popularization plan to encourage customers to use continuously and convince their peers to use the same services. Increase in peer-to-peer interaction, such as chat room, may win a positive word of mouth to help acquire more customers and retain current ones. Third, mobile device is about saving time, varying location, and convenience. Basic call function or means of communication are good enough to satisfy customers thus it is advisable to add rich information (e.g. interesting expression and picture) or convenient input method in the text editing and improve the infrastructure construction (e.g. wireless terminal equipment).

### Conclusion

The study has validated the relationship between the cognitive factors, affective factors and consumption experience of mobile devices. Mediating by emotion, media richness, and subjective norms have the significant positive effects on consumption experience, while the convenience and self-efficacy have the negative effects. This research has shown

the factors which performed an effect on the consumption experience, especially on a hedonic dimension.

The limitations of this research are mainly on the sample and research method. First, the use of a sample with a majority of university students and mobile phone present constraints in that the findings may not be reproducible with other populations or with other mobile devices. Second, we study mobile commerce as a whole, regardless of classification between hedonic services and utilitarian functions. Third, we conducted the survey focused on users' perception rather than their actual behavior, regardless of the subjectivity of data.

For future study, comparative study among different respondents' categories is expected. For example, it would be interesting to survey between younger and educated users and older and less-educated ones. Besides, demographic factors like gender and age, which may bias the result, can be involved into study. Last but not least, additional variables, which can improve the explanatory ability to usage experience, should be added into the model. It would also be interesting to study more hedonic factors, such as appearance of mobile device, upon theories in marketing, consumer behavior and psychology.

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