



Structural relationship between mobile shopping characteristics, consumption values, impulse buying, and consumer satisfaction



 Kyongmin Lee¹

 Kang-Won You²⁺

¹Dong-A University, Department of Physical Education, Busan, Republic of Korea.

Email: dsukmlee@dau.ac.kr

²Jeonju University, Department of Sports Coaching, Jeonju, Republic of Korea.

Email: ykcounm@naver.com



(+ Corresponding author)

ABSTRACT

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This study aims to empirically determine the structural relationship between mobile shopping characteristics, consumption values, impulse buying, and satisfaction in order to promote an understanding of impulse buying in the mobile shopping environment. To this end, we conducted a survey using the convenience sampling method on sports management majors attending a four-year university in Seoul, South Korea, who have experience purchasing sports products on a mobile device. We analyzed the collected data using descriptive statistics analysis, confirmatory factor analysis, reliability analysis, correlation analysis, and structural equation modeling. The key findings are as follows: First, mobile shopping attributes had a positive effect on consumption values. Second, consumption values of college student consumers in the mobile shopping environment had an effect on impulse buying. Third, impulse buying in the mobile shopping environment had a positive effect on the satisfaction of college student consumers. The results of this study have significance in that they provide the basic data for establishing efficient marketing strategies that can induce impulse buying to act as a positive shopping driver. Furthermore, this study is significant because it empirically demonstrates the casual relationship between impulse purchases and consumer satisfaction, and that consumption value is a determinant of impulse purchases.

Contribution/ Originality: Contrary to the argument that consumer satisfaction will be low after impulse purchases, this study shows that impulse purchases can be a positive shopping driver. The study's results suggest that mobile shopping service providers can effectively incorporate impulse buying into their marketing strategy.

1. INTRODUCTION

Mobile shopping is a form of electronic transaction performed through wireless communication with mobile devices like smartphones, tablet computers, and personal digital assistants (PDAs). Compared to other types of transactions (e.g., general commerce, e-commerce), mobile commerce is more likely to induce impulse buying by customers [1]. A rational buying decision process generally consists of the following stages: problem recognition, information search, alternative evaluation, and purchase decision [2]. On the other hand, impulse buying is the buying behavior of consumers who tend to respond to a particular stimulus and buy unreflectively with an internal urge without any plan or purchase intention [3]. Therefore, impulse buying is an immediate buying behavior induced by a particular stimulus and can be understood as a concept contrary to rational buying behavior

wherein consumers make a purchase decision after comparing and reviewing all kinds of information about a product and evaluating all the alternatives [4].

Numerous studies have reported a negative relationship between impulse buying and consumer satisfaction due to its spontaneous nature and lack of cognitive appraisal by consumers [4, 5]. However, in the online and mobile shopping environments, consumers can obtain satisfaction through the impulsive buying experience. This is because impulse buying triggered by shopping characteristics, a variety of product information, and real-time price discounts provided by the digital shopping environment is likely to lead to consumer satisfaction [6].

These findings are contrary to the expectation that consumer satisfaction will be low after impulse buying, highlighting the need to find ways to induce impulse buying to serve as a positive shopping driver and to effectively apply them to marketing strategies of mobile shopping service providers. Therefore, this study aims to empirically determine the structural relationship between mobile shopping characteristics, consumption values, impulse buying, and satisfaction, shedding light on impulse buying, which is frequently observed in the mobile shopping environment.

2. THEORETICAL BACKGROUND AND HYPOTHESIS SETTING

2.1. Relationship between Mobile Shopping Service Characteristics and Consumption Values

Mobile shopping has characteristics that are different from those of wired network-based e-commerce. Researchers use different terms to classify and define the characteristics of mobile shopping services, but some of the typical characteristics are personalization, ubiquity, convenience, and security [7]. Personalization, an attribute to mobile commerce, can play a key role in fulfilling consumers' consumption values. Consumers achieve utilitarian values when they select a product they wish to purchase or gather the necessary shopping information [8]. On the other hand, hedonic values are obtained when consumers shop to refresh themselves or enjoy the shopping experience per se, not when they purchase a product they really want [8]. Therefore, this study sets the following hypotheses, assuming that personalization of mobile commerce will have an effect on utilitarian and hedonic values of consumers.

H₁: Personalization of mobile shopping will have an effect on consumption values.

H₁₋₁: Personalization of mobile shopping will have a positive effect on utilitarian consumption values.

H₁₋₂: Personalization of mobile shopping will have a positive effect on hedonic consumption values.

Another attribute of mobile commerce is ubiquity, which enables diverse uses regardless of time and space. In the past, e-commerce focused on the wired network, which required a space equipped with circuits or lines for Internet access. However, mobile commerce is based on wireless Internet and thus can overcome the time and space constraints of the wired connection [9]. The ubiquitous nature of mobile commerce allows consumers to collect real-time shopping information anytime and anywhere and easily purchase the product they want using a mobile device that has wireless Internet access. Ubiquity increases continuous interactions between consumers and mobile commerce service providers, which may have a positive effect on the increase of consumption values. A study by Ma, et al. [10] on mobile commerce reported that ubiquity of mobile commerce increases utilitarian and hedonic consumption values of consumers, which ultimately leads to an increase in repurchase intention. A study by Kim [11] on the relationship between mobile commerce characteristics and consumption values revealed that ubiquity is a determinant influencing the increase in utilitarian and hedonic consumption values. Therefore, this study sets the following hypotheses, assuming that ubiquity of mobile commerce will have an effect on utilitarian and hedonic values of consumers.

H₂: Ubiquity of mobile shopping will have an effect on consumption values.

H₂₋₁: Ubiquity of mobile shopping will have a positive effect on utilitarian consumption values.

H₂₋₂: Ubiquity of mobile shopping will have a positive effect on hedonic consumption values.

Convenience is another aspect of mobile commerce that can affect consumption values. The mobile commerce environment provides users with convenience in use, purchase, and payment [12]. Mobile shopping resolves the inconvenience of having to actually go to a store to buy something, which is an obstacle to offline purchases, and also provides functional benefits through which consumers can easily search for and buy products on easy-to-carry mobile devices. Additionally, users can conveniently make payments using a simple payment service. In the end, convenience minimizes the time and effort required in the consumer decision-making process, which can increase consumption values of consumers [13]. A study on the relationship between the characteristics of a mobile accommodation app service and consumption values [14] found that the convenience of the service had a positive effect on utilitarian and hedonic values of consumers. A study on the effect of convenience of a food delivery app service on consumption values [13] discovered that subfactors of convenience such as access convenience, decision-making convenience, and ex-post benefit convenience had a positive effect on consumption values. Therefore, this study sets the following hypotheses, assuming that the convenience of mobile commerce will have a positive effect on the utilitarian and hedonic values of consumers.

H₁: Convenience of mobile shopping will have a positive effect on consumption values.

H₁₋₁: Higher convenience of mobile shopping will lead to higher utilitarian consumption values.

H₁₋₂: Higher convenience of mobile shopping will lead to higher hedonic consumption values.

In wireless network-based mobile commerce, users are more vulnerable to the risks of personal data breaches or hacking. Security threats reduce the reliability of mobile commerce services, which may ultimately inhibit the continuous use and satisfaction of mobile shoppers [15]. Similarly, user awareness of security threats in mobile commerce may influence consumption values. Researchers found that resolving security threats in e-commerce increased the consumption values of users [16]. Therefore, this study sets the following hypotheses, assuming that the security of mobile commerce will have a positive effect on utilitarian and hedonic values of consumers.

H₂: Security of mobile shopping will have a positive effect on consumption values.

H₂₋₁: Higher security of mobile shopping will lead to an increase in utilitarian consumption values.

H₂₋₂: Higher security of mobile shopping will lead to an increase in hedonic consumption values.

2.2. Relationship between Consumption Values and Impulse Buying

Consumers derive their ultimate utility from purchasing a product service [17]. Consumers buy products they value and hope to achieve their values. Therefore, consumer evaluation of a product may vary depending on how valuable it is to them. In this aspect, consumption values are a key variable used to predict the buying behavior of consumers, such as why they choose and buy a certain product or brand [18].

In the mobile commerce environment, consumers seek diverse values through the purchase of certain products and services, with consumption values largely divided into utilitarian and hedonic values [19]. Utilitarian values are related to rational and efficient choices of products that consumers intend to ultimately buy [20]. According to a study on the effect of point-of-purchase advertising and consumption values on impulse buying [21] consumers who seek utilitarian values tend to avoid impulse buying. A study on the relationship between consumption values and impulse buying on mobile accommodation apps [14] also revealed that consumers seeking utilitarian values are not involved in impulse buying. Therefore, this study sets the following hypothesis, assuming that utilitarian values of consumers will have a negative effect on impulse buying.

H₃: Higher utilitarian values of consumers in mobile commerce will lead to a decrease in their impulse buying.

The rational consumer decision-making process relates hedonic values to the emotional aspect of the shopping experience, not the purchase of the particular product. Consumers seeking hedonic values attach importance to emotional benefits such as pleasure, refreshment, and interest experienced while shopping, rather than the utilitarian aspects of the product itself [22]. Therefore, they tend to make purchase decisions based on hedonic values around the product, rather than functional values or planned behavior [8]. In the mobile commerce

environment, consumers seeking hedonic values are likely to engage in unplanned impulse buying. This is because mobile commerce apps provide consumers with motives such as coupons, mileage, and visual pleasure that encourage them to participate in mobile shopping and visit the app frequently, even without any purchase intention [23]. In this context, this study sets the following hypothesis, assuming that the hedonic values of consumers will have a positive effect on impulse buying.

H₁: Higher hedonic values of consumers in mobile commerce will lead to an increase in their impulse buying.

2.3. Relationship between Impulse Buying and Consumer Satisfaction

From a business perspective, consumer satisfaction is often discussed as a key variable affecting behavioral intentions of consumers, like loyalty [24]. Consumer satisfaction is determined by comparing consumer expectations before purchasing a seller's product or service to actual experience after the purchase [25]. Thus, consumers satisfied with a product or service they purchased may make a repurchase decision, while dissatisfied consumers may not do so or be involved in negative word-of-mouth [26].

According to a study on the effect of impulse buying on consumer satisfaction in mobile commerce [7] mobile shopping characteristics such as ubiquity, instant connectivity, and security have a positive effect on impulse buying, and impulse buying triggered by shopping characteristics has a positive effect on consumer satisfaction. A study on the relationship between impulse buying tendency and consumer satisfaction among online shopping mall users [27] revealed that both promotion-focused impulse buying based on price discounts or gifts and pure impulse buying without any prior plan or intention to purchase had a positive effect on consumer satisfaction. Based on these results, this study sets the following hypothesis, assuming that the impulse buying will have a positive effect on consumer satisfaction.

H₂: More impulse buying by consumers in mobile commerce will lead to higher consumer satisfaction.

3. RESEARCH METHOD

3.1. Sample and Data Collection

To examine the structural relationship between mobile shopping characteristics, consumption values, impulse buying, and consumer satisfaction, this study selected sports management majors attending a four-year university in Seoul, South Korea, who have experience purchasing a sports product using a mobile device. Convenience sampling obtained the data, and the final statistical analysis used 163 out of the 200 distributed questionnaires, excluding those with insincere responses or omissions. Data was obtained using convenience sampling, and 163 out of the 200 distributed questionnaires were used in the final statistical analysis after excluding those with insincere responses or omissions. Table 1 shows the specific characteristics of the subjects.

Table 1. General characteristics of subjects.

Variables	Category	Frequency	Percentage
Gender	Male	100	61.3
	Female	63	38.7
Year	Freshman	45	27.6
	Sophomore	53	32.5
	Junior	47	28.8
	Senior	18	11.0
Age	Under 21	42	25.8
	21 to 22	52	32.0
	23 to 24	36	22.1
	25 and above	33	20.2

3.2. Variable Measurement

The questionnaire consisted of items measuring general characteristics, mobile shopping characteristics, consumption values, impulse buying, and consumer satisfaction. All items, excluding general characteristics, were rated on a 5-point Likert scale.

To measure personalization, ubiquity, and security among mobile shopping characteristics, the questionnaire developed by Park, et al. [7] was revised and used according to the purpose of this study. We revised and used Du [28] questionnaire to measure convenience in this study. The mobile shopping questionnaire consisted of a total of 14 items: 3 on personalization, 4 on ubiquity, 4 on convenience, and 3 on security.

The measurement tool for utilitarian consumption values of consumers consisted of a total of 4 items after revising and supplementing the questionnaire developed by Du [28]. Hedonic consumption values of consumers were measured using the questionnaire revised and supplemented by Kim [16] based on the items used by Babin, et al. [8]. Utilitarian and hedonic consumption values comprised 4 items each.

Impulse buying was measured with the questionnaire used by Park, et al. [7]. Impulse buying was a single factor consisting of a total of 4 items. Consumer satisfaction was measured after revising and supplementing the questionnaire used by Park, et al. [7]. Satisfaction was a single factor consisting of a total of 4 items.

3.3. Analysis Method

Statistical programs SPSS 21.0 and AMOS 21.0 were used to analyze the data. We analyzed the relationship between the measured variables using correlation analysis, and tested the validity, of the measurement tool with confirmatory factor analysis. Cronbach's α value was calculated to examine the reliability, and structural equation model analysis was conducted to verify the hypotheses of this study.

3.4. Validity and Reliability of the Variable Measurement

Based on the results of the confirmatory factor analysis (see Table 2), the model fit indices were as follows ($\chi^2=599.116$, $df=377$, $p<.001$, $\chi^2/df=1.589$, Turker-Lewis index (TLI) =.904, comparative fit index (CFI) =.917, root mean square error of approximation (RMSEA) = .060). Thus, the model fit indices were relatively acceptable for goodness of fit. All average variance extracted (AVE) and construct reliability (CR) values were above .50 and .70, respectively, and as shown in Table 3, the squared correlation coefficients did not exceed the AVE values [29]. Thus, the convergent and discriminant validity were confirmed. Furthermore, Cronbach's alpha values were all above .70 (see Table 2). Thus, the measures used in this study had a satisfactory level of reliability.

4. RESULTS

4.1. Correlation Analysis

Table 3 shows the correlation between the variables included in this study. Mobile shopping characteristics such as personalization, ubiquity, convenience, and security all had a significant positive correlation with utilitarian and hedonic consumption values. Utilitarian consumption values had a negative correlation with impulse buying, while hedonic consumption values had a positive correlation with impulse buying. Impulse buying has a significant positive correlation with consumer satisfaction. Moreover, the correlation coefficient was smaller than the square root of AVE, thereby securing discriminant validity.

Table 2. Results of confirmatory factor analysis and reliability analysis.

Factor	Estimate	S.E.	C.R.	CR	AVE	α
Personalization3	1			0.900	0.753	0.826
Personalization2	0.974	0.087	11.158			
Personalization1	0.816	0.095	8.561			
Ubiquity4	1			0.925	0.758	0.892
Ubiquity3	1.017	0.114	8.885			
Ubiquity2	1.255	0.109	11.462			
Ubiquity1	1.295	0.115	11.220			
Convenience4	1			0.870	0.636	0.819
Convenience3	0.888	0.153	5.815			
Convenience2	1.456	0.172	8.470			
Convenience1	1.374	0.165	8.331			
Security3	1			0.893	0.735	0.852
Security2	1.100	0.108	10.217			
Security1	1.096	0.109	10.098			
Utilitarian value4	1			0.843	0.575	0.788
Utilitarian value3	1.073	0.131	8.189			
Utilitarian value2	1.019	0.126	8.098			
Utilitarian value1	0.945	0.134	7.036			
Hedonic value4	1			0.843	0.578	0.797
Hedonic value3	1.169	0.166	7.039			
Hedonic value2	1.404	0.193	7.268			
Hedonic value1	0.978	0.151	6.476			
Impulse buying4	1			0.902	0.698	0.921
Impulse buying3	0.988	0.078	12.729			
Impulse buying2	1.129	0.076	14.858			
Impulse buying1	1.123	0.079	14.181			
Satisfaction4	1			0.896	0.682	0.855
Satisfaction3	0.937	0.090	10.406			
Satisfaction2	1.152	0.117	9.872			
Satisfaction1	1.107	0.107	10.301			

Table 3. Correlation analysis among study variables.

Variable	1	2	3	4	5	6	7	8
Personalization	1 (0.753)							
Ubiquity	0.230**	1 (0.758)						
Convenience	0.215**	0.127	1 (0.636)					
Security	0.016	0.013	0.289**	1 (0.735)				
Utilitarian values	0.400**	0.346**	0.391**	0.340**	1 (0.575)			
Hedonic values	0.326**	0.205**	0.441**	0.405**	0.243**	1 (0.578)		
Impulse buying	0.001	-0.065	0.018	-0.007	-0.288**	0.281**	1 (0.698)	
Satisfaction	0.158*	0.131	0.181*	0.062	-0.052	0.365**	0.471**	1(0.682)

Note: **p<0.01. *p<0.05, ()=AVE.

4.2. Hypothesis Testing

Table 4 shows the results of hypothesis testing. The fit indices of the structural model were as follows ($\chi^2 = 620.988$, $df = 388$, $p < 0.001$, $\chi^2/df = 1.600$, $TLI = 0.902$, $CFI = 0.913$, $RMSEA = 0.061$). Personalization was found to positively influence utilitarian ($\beta = 0.344$, $p < 0.001$) and hedonic consumption values ($\beta = 0.276$, $p < 0.01$). Therefore, we supported Hypothesis 1-1 and Hypothesis 1-2.

Ubiquity was found to positively influence utilitarian consumption values ($\beta = 0.249$, $p < 0.001$). Thus, Hypothesis 2-1 was supported. However, ubiquity was found to have no significant effect on hedonic consumption values ($\beta = 0.276$, $p < 0.01$). Thus, Hypothesis 2-2 was rejected. Convenience was found to positively influence utilitarian ($\beta = 0.272$, $p < 0.001$) and hedonic consumption values ($\beta = 0.205$, $p < 0.05$). Thus, Hypotheses 3-1 and 3-2 were supported.

Security was found to positively influence utilitarian ($\beta = 0.344$, $p < 0.001$) and hedonic consumption values ($\beta = 0.371$, $p < 0.001$). Therefore, we found support for Hypothesis 4-1 and Hypothesis 4-2. Utilitarian consumption values were found to negatively influence impulse buying ($\beta = -0.482$, $p < 0.001$), whereas hedonic consumption values were found to positively influence impulse buying ($\beta = 0.536$, $p < 0.001$). Thus, Hypotheses 5 and 6 were supported. Impulse buying was found to positively influence consumer satisfaction ($\beta = 0.514$, $p < 0.001$). Thus, Hypothesis 7 was supported.

Table 4. Structural modeling results.

Hypothesis testing	Estimate		S.E.	C.R.
	B	β		
H1-1 Personalization \rightarrow Utilitarian consumption values	0.291	0.344	0.075	3.879***
H1-2 Personalization \rightarrow Hedonic consumption values	0.246	0.276	0.081	3.035**
H2-1 Ubiquity \rightarrow Utilitarian consumption values	0.225	0.249	0.073	3.077**
H2-2 Ubiquity \rightarrow Hedonic consumption values	0.108	0.113	0.077	1.395
H3-1 Convenience \rightarrow Utilitarian consumption values	0.277	0.272	0.091	3.058**
H3-2 Convenience \rightarrow Hedonic consumption values	0.221	0.205	0.097	2.269*
H4-1 Security \rightarrow Utilitarian consumption values	0.283	0.344	0.074	3.840***
H4-2 Security \rightarrow Hedonic consumption values	0.322	0.371	0.085	3.811***
H5 Utilitarian consumption values \rightarrow Impulse buying	-0.933	-0.482	0.214	-4.354***
H6 Hedonic consumption values \rightarrow Impulse buying	0.981	0.536	0.211	4.654***
H7 Impulse buying \rightarrow Consumer satisfaction	0.348	0.514	0.059	5.876***

Note: $\chi^2 = 620.988$ ($df=388$, $p < 0.001$), $\chi^2/df=1.600$, TLI=0.902, CFI=0.913, RMSEA=0.061.
* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

5. DISCUSSION

This study analyzed the structural relationship between mobile shopping characteristics, consumption values, impulse buying, and consumer satisfaction among college students majoring in sports management. The discussion that follows is based on the key research findings and previous studies.

First, mobile shopping characteristics had a positive effect on consumption values of college students. This result is consistent with that of a study reporting that mobile shopping characteristics affect consumption values of users [14]. Among mobile shopping characteristics, personalization and security had a relatively greater effect on utilitarian and hedonic consumption values of college students. Thus, to increase consumption values for college students, mobile shopping service providers must establish measures to minimize the potential security threats in mobile shopping and provide services that are optimized and customized for college students.

In addition, ubiquity and convenience had a positive effect on increased consumption values of college students. This is because ubiquity and convenience allow college students to collect real-time shopping information anytime and anywhere and easily purchase the product they want using a mobile device with wireless Internet access. As a result, mobile shopping service providers must provide college students with convenience in terms of use, purchase, and payment.

Second, consumption values of college students had an effect on impulse buying in the mobile shopping environment. More specifically, utilitarian values had a negative effect on impulse buying, while hedonic values had a positive effect. This result is consistent with the findings of studies reporting that consumers seeking hedonic values have greater tendency to make impulse purchases than those seeking utilitarian values [14, 21]. College students seeking utilitarian values attach importance to time and cost effectiveness and tend to purchase the product they want based on its functional values (price, physical properties, quality, etc.) [30]. Therefore, college students who attach importance to utilitarian values are unlikely to be involved in impulse buying, which is a form of spontaneous purchase of an unplanned product. Therefore, to increase the frequency of impulse buying among college students seeking hedonic values, mobile shopping service providers must provide incentives such as coupons, mileage, and visual pleasure for users to participate in mobile shopping and frequently visit the app [23].

Third, impulse buying in the mobile shopping environment had a positive impact on the satisfaction of college students. This result supports the findings of studies claiming that impulse buying in an online shopping environment does not necessarily lead to consumer regret and dissatisfaction [7, 27, 31]. This is because college students seeking hedonic values in the mobile shopping environment make impulse purchases to refresh their moods temporarily rather than consider the values or practicality of a product; such impulse buying produces positive emotions [32]. A study on the relationship between impulse buying tendency and satisfaction in online shopping mall consumers [27] discovered that consumers with a high frequency of browsing Internet shopping malls make more impulse purchases due to buying pressure and feel more satisfied after impulse buying. Therefore, to increase impulse buying of college student consumers seeking hedonic values in mobile shopping, it is necessary to implement strategies to increase their frequency of access to mobile shopping.

6. CONCLUSION

This study is significant in that it empirically demonstrated the causal relationship between impulse buying and consumer satisfaction and revealed that consumption values are determinants of impulse buying. We can use the results as basic data to develop efficient marketing strategies that induce impulse buying and serve as a positive shopping driver. However, this study has methodological limitations that need to be overcome in future research. First, this study only included college students majoring in sports with mobile shopping experience, which limits the generalizability of the results to all age groups. Future studies must empirically prove whether the causal relationship among the variables used in this study is applicable to other age groups. Second, this study did not categorize impulse buying into different types. Future studies must categorize impulse buying to determine the relationship between consumption values, types of impulse buying, and consumer satisfaction.

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