A Framework for Purchase Intentions Toward a Brand-New Smartphone Based on Self-Presentation and Aesthetics*

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This study examines the effects of self-presentation and aesthetics on purchase intentions toward a brand-new smartphone through a research model that accounts for these intentions in a more comprehensive manner than traditional ICT frameworks. The constructs were selected based on the three-level processing theory: aesthetics at the visceral level, perceived usefulness and playfulness at the behavioural level, and self-presentation at the reflective level. The hypotheses were developed from self-presentation theory and the attractiveness stereotype which is one of theories in human-computer interactions (HCI). For the validation of hypotheses, the research model was empirically tested for the purchase intention of Apple's iPhone5 by university students in Korea.

Keywords : Smartphone, Self-Presentation, Aesthetics, Three-Level Processing Theory, Purchase Intention

Ⅰ. Introduction

People depend on smartphones more than ever, and consumers' demand for smartphones has been increasing rapidly. As a result, the life cycle of smartphones is not over one year [Ferreira, 2011; Mariano, 2012; Ziegler, 2011]. The rapid and frequent emergences of new models have not only led to fierce competition among vendors but also forced many users to make frequent decisions on the purchase of new models. This implies that the exploration of the factors for smartphone adoption intention, which would compose a framework of purchase intentions toward a brand new smartphone, is one of the most important issues both practically and theoretically.

A smartphone is a small and portable computer with communications capability, not a mobile phone with computing capability [Dvorak, 2012]. Thus, it should be considered as a reasonable approach that previous studies which attempted to analyze smartphone adoption were based on traditional frameworks of information and communication technology (ICT) acceptance, the technology acceptance model (TAM) [Davis, 1989; Davis et al., 1989], and its extended versions [Chen et al., 2009; Chtrourou and Souiden, 2010; Chun et al., 2012; Kim, 2008; Liu et al., 2010; Shin et al., 2011]. In these frameworks, the adoption of a new technology is assumed to be determined by the individual's belief that using the technology would provide utilitarian and/or hedonic values, which has been the main focus in information systems (IS) research community and a large segment of human-computer interaction (HCI) community [Tractinsky, 2004].

However, smartphone adoption (more pre-cisely, purchase intentions) may have some important theoretical considerations that cannot be explained by use beliefs under traditional frameworks. According to previous studies of consumer behavior, an individual's motivation for purchasing goods is not limited to their utilitarian or hedonic value but also includes their symbolic or expressive value [Choo et al., 2012; Smith and Colgate, 2007; Tynan et al., 2010]. An individual may wish that purchased goods would provide a means of self-expression or have some self-meaning independent of utility or pleasure [Smith and Colgate, 2007]. Similarly, the adoption of a new technology may be known to be influenced by symbolic attributes as well as technological functions [Katz and Sugiyama, 2006].

Therefore, the presentation of the self may be another motive for purchasing a smartphone. Unlike most target technologies in ICT acceptance frameworks, a smartphone is a portable device that can be ubiquitously carried and easily seen by anyone, which may induce some to perceive it as a fashion item. Fashion is an area rich in communicative information on the self [Katz and Sugiyama, 2006]. That is, not only the use but also just possession of a smartphone may imply self-presentation in the offline world.

Moreover, a smartphone is a platform that allows users to ubiquitously access and conveniently use social networking sites (SNSs) and blogs, which are considered as major tools for self-presentation [Kim et al., 2012; Ong et al., 2001]. Therefore, a smartphone can be considered as a tool for improving self-presentation in cyberspace.

In view of self-presentation by possession, the visual appearance can be as important as what can be fulfilled through technology use

because smartphones, which can be beautiful, may be perceived to improve one's self-presentation capability. In addition, an individual's perception of aesthetics may influence his or her use perceptions. Theoretically, given an object, its aesthetic evaluation is immediately formed and can influence many other successive cognitive processes for evaluating other factors [Tractinsky, 2004; Norman, 2004]. In terms of smartphone adoption, given a new smartphone model, its usefulness and playfulness evaluation may vary according to its aesthetics. That is, the one that looks beautiful may be perceived as more playful and useful than others.

This study proposes a framework for examining purchase intentions toward a brand-new smartphone based on self-presentation and aesthetics. For this, the study considers a research model that can account for purchase intentions toward a smartphone in a more comprehensive manner than traditional ICT frameworks. The constructs were selected through design requirements based on the three-level processing theory [Norman, 2004], and the hypotheses were developed based on self-presentation theory [Goffman, 1959] and human-computer interaction (HCI) theories [Tractinsky et al., 2000]. For validation purposes, the research model was empirically tested for the purchase intention of Apple's iPhone 5 by university students in Korea.

Ⅱ. Literature Review

As described in introduction, most studies for smartphone adoption have been based on traditional frameworks of ICT acceptance, such as TAM and its extended versions. These frameworks provided very useful and persuasive mechanisms for explaining or predicting smartphone adoption in various ways as like other ICT's.

For example, Kim [2008] attempted to model smartphone adoption in working places. He extended the original TAM by adding two moderating variables, job relevance and experience, in addition to two antecedents for intention, perceived cost savings and company's willingness to fund. Chen et al. [2009] empirically assessed and integrated four models for prediction smartphone adoption: TAM, TAM with the effect of self-efficacy, TAM with innovation and diffusion of technology (IDT) model and TAM with self-efficacy and IDT. Chtourou and Souiden [2010] found the roles of fun in adoption of smartphones: the antecedent of the attitude toward smartphone and the mediator between usefulness and attitude. Chun et al. [2012], by proposing an extended version of TAM, showed that smartphone adoption is highly influenced by social influence and self-image model and hedonic enjoyment is equally important as utilitarian usefulness in predicting smartphone adoption. Shin et al. [2011] identified the factors for determining continuance intention of using a smartphone rather than acceptance intention. They identified quality expectancy, usability expectancy, and facilitating factors, which are based on the theory of acceptance and usage technology (UTAUT) [Venkatesh et al., 2003] and expectation-confirmation theory (ECT) [Bhattacherjee, 2001] as well as TAM.

However, while these approaches are very appropriate for explaining the roles of utilitarian or hedonic values of smartphones, traditional frameworks have some limitations in explaining

the relationships between utilitarian and expressive values as well as between expressive values, aesthetics and self-presentation. Hence, in order to fill these gaps, in addition to traditional ICT acceptance approaches, some other theories or frameworks of accounting for more comprehensive values should be considered.
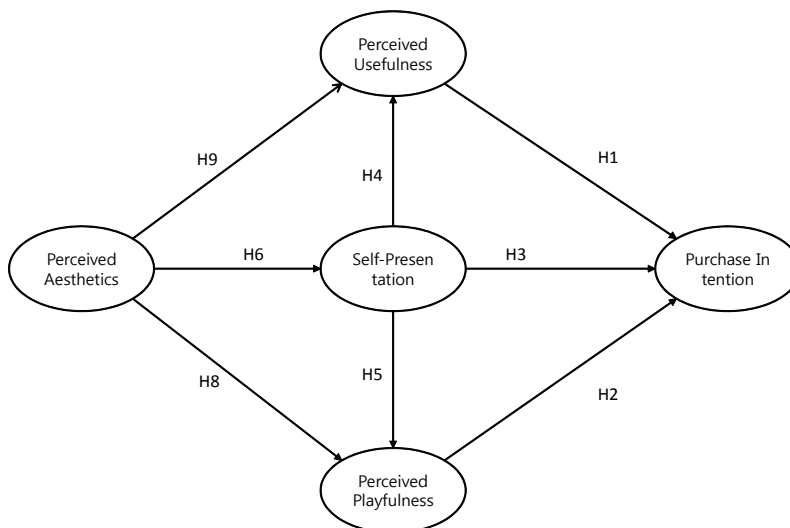
Ⅲ. Research Model

3.1 Constructs

<Figure 1> shows the research model, which includes five constructs and eight hypotheses.

According to the three-level processing theory that explains the mechanism of evaluating and interpreting artifacts in human behavior [Norman, 2004], human beings have three-levels of processing: visceral, behavioral, and reflective levels. The visceral level includes pre-consciousness and pre-thought, reflects the case in which the appearance matters. An evaluation at this level can influence higher levels. The behavioral level is about the individual's use of a product and experience with it. At this level, an evaluation is made to determine whether a product does what is needed and is fun to use. At the reflection level, an individual's interpretation, understanding, and reasoning drive from this level. An individual's evaluation and interpretation at the reflective level can influence or be influenced by those at visceral and behavioral levels. An individual's self-identity is located at the reflective level.

In terms of smartphone adoption, at the visceral level, the visual appearance of a given smartphone is evaluated, which is related to aesthetics. An evaluation at the behavioral level focuses on the individual's smartphone use and experience, which includes the major variables in traditional frameworks of ICT adoption, usefulness, and playfulness of a given smartphone. Finally, at the reflective level, the expressive values of a given smartphone are evaluated. The capability of self-presentation would be one of such evalu-

<Figure 1> Research Model

<Table 1> Definitions of Constructs

Level	Constructs	Definition
Visceral	Perceived aesthetics	The extent to which an individual perceives a given smartphone to be visually beautiful and attractive beyond any performance consequences.
Behavioral	Perceived usefulness	The extent to which an individual perceives a given smartphone to help what he or she wants to do.
	Perceived playfulness	The extent to which an individual perceives a given smartphone to provide enjoyment.
Reflective	Self-presentation	The perceived capability of a smartphone to enhance an individual's impression in the eyes of others.

ations. <Table 1> provides the definition of each construct in the research model.

3.2 Hypotheses

It is well known that perceived usefulness is a construct of extrinsic motivation, which can drive attitudes toward achieving specific goals and rewards, whereas perceived playfulness is a construct of intrinsic motivation that implies the perception of pleasure and satisfaction from engaging in a given behavior [Agarwal and Karahanna, 2000; Moon and Kim, 2001]. Although the strength of effects may vary according to IS type [Van der Heijden, 2004], these two constructs are generally considered as the most important drivers of IS acceptance [Moon and Kim, 2001; Lin et al., 2005; Pike, 2004; Shin, 2009]. This indicates that purchase intentions toward smartphones may be influenced by both perceived usefulness and playfulness:

Hypothesis-1: Perceived usefulness has a positive effect on purchase intentions.

Hypothesis-2: Perceived playfulness has a positive effect on purchase intentions.

Although extrinsic and intrinsic motives, which

can be satisfied through technology use, are most likely to influence ICT adoption in general, purchase intentions toward smartphones may involve another type of motivation, namely self-presentation, which can be satisfied not only by smartphone use but also by its possession.

According to Goffman, when people engage in social interactions with others, they try to make others accept a desired impression and maintain it by consistently engaging in coherent and complementary behaviors [Schlenker, 1975]. Like actors performing their roles on stage in front of audiences, people present themselves to others to manage their impression [Goffman, 1959]. The visual appearance, which is an integral part of self-presentation, can also contribute to this impression management by providing physical signs for communicating and reinforcing the identity that the individual wishes to project [Goffman, 1959], which is consistent with actors putting on their makeup and dressing up for their roles. Goffman referred to this appearance as a personal front.

Self-presentation is for the identity, which answers the question "Who am I?" [Ma and Agarwal, 2007], and can be classified into two types: individual identity and affiliative identity [Schau and Gilly, 2003]. Individual identity is the self

that is clearly differentiated from others and unique, and affiliative identity is for situating the self within a social world and for communicating the identity to intended audiences [Kleine et al., 1995].

As in the case of wearing a wristwatch, the possession of a new smartphone implies a personal front as part of embedded self-presentation [Katz and Sugiyama, 2006] and this can satisfy both individual identity and affiliative identity. That is, a new smartphone is expected to involve an advanced technology and have a nice appearance, which can enhance individual identity, and the possessor of a smartphone is expected to belong to a user group, which reflects affiliative identity. An individual's identity from self-presentation can motivate his or her material possession [Kleine et al., 1995]. In this regard, the following hypothesis is proposed.

Hypothesis-3: Self-presentation has a positive effect on purchase intentions.

A smartphone is a platform that allows users to ubiquitously access and conveniently use social networking sites (SNSs) and blogs, which are considered as major tools for self-presentation [Kim et al., 2012; Ong et al., 2001]. A user may want to make other users like him (or her) by trying to present his (or her) positive aspects in order to gain benefits or favors from them. That is, users want to influence others and gain rewards through self-presentation, which in turn can influence their extrinsic motivation, namely perceived usefulness [Kim et al., 2012]. On the other hand, users may want to simply enjoy their self-presentation in cyberspace in various ways such as simple text-based messages, avatars, or

music. In this case, self-presentation is not for any benefits or favors but purely for enjoyment or pleasure of doing self-presentation, which is related to hedonic parts of using a smartphone. Thus, self-presentation would influence intrinsic motivation of using a smartphone, namely perceived playfulness [Ma and Agarwal, 2007]. A major role of smartphones is to provide a platform that can facilitate access to online sites and their use for self-presentation purposes. This indicates that an individual's self-presentation capability in cyberspace may influence his or her beliefs about the use of a smartphone, namely its perceived usefulness and playfulness:

Hypothesis-4: Self-presentation has a positive effect on perceived usefulness.
Hypothesis-5: Self-presentation has a positive effect on perceived playfulness.

The reverse relationships of hypotheses 4 and 5, usefulness and playfulness to self-presentation, may not be valid since usefulness and playfulness of using a smartphone is not perceived only through self-presentation, while self-presentation would influence both perceptions. For example, for some users, smartphones' usefulness would be found from the communication with others, and similarly playfulness from playing games.

An aesthetic evaluation of a certain object is known to take place immediately and influence successive cognitive processes for the object [Norman, 2004]. For example, given a new smartphone, users immediately evaluate its aesthetics even when there is no information on it, which may influence their self-presentation capability and use beliefs such as perceived usefulness and playfulness.

Attractive people are often perceived as having positive qualities, which is known as the attractiveness stereotype [Dion et al., 1972]. That is, people tend to believe that physically attractive individuals have other attractive qualities [Langiois et al., 2000] and that they can enhance their physical attractiveness by possessing some attractive objects. In terms of self-presentation, a more attractive personal front may better facilitate impression management than other factors. As discussed earlier, because a smartphone can be considered as a personal front, the more attractive the smartphone, the more likely it is to be perceived to provide the capability for self-presentation. In this regard, the following hypothesis is proposed:

Hypothesis-6: Perceived aesthetics has a positive effect on self-presentation.

Previous HCI studies have suggested that the attractiveness stereotype may be applied to IS use beliefs. Tractinsky et al. [2000] found a correlation between perceived aesthetics and perceived usability for automated teller machines. Hassenzahl [2004] provided support for the attractiveness stereotype in the context of MP3 players, namely a strong relationship between aesthetics and the overall use judgment. Despite some theoretical controversy, the aesthetic perception of an object can influence other perceived attributes of the same object. Therefore, perceived aesthetics may influence the evaluation of technology use, including perceived usefulness and playfulness. In addition, perceived aesthetics can involve emotions such pleasure, fun, and excitement [Tractinsky, 2004; Parra et al., 2012; Tzou and Lu, 2009]. Previous studies have

demonstrated a positive relationship between beauty and pleasure in the context of laptop computers [Tzou and Lu, 2009]. Therefore, the visual appearance and playfulness may be related to each other. That is, the more attractive the object, the more playful it is perceived to be. For example, using a more attractive smartphone may be perceived as more playful. In this regard, the following two hypotheses are proposed:

Hypothesis-7: Perceived aesthetics has a positive effect on the perceived usefulness of a smartphone.

Hypothesis-8: Perceived aesthetics has a positive effect on the perceived playfulness of a smartphone.

Ⅳ. Method

For the validation of the research model, Apple's iPhone 5 was used as the target smartphone. A total of 205 university students in Korea (137 males) were surveyed. These respondents had smartphones but not the iPhone 5. The survey was conducted before the iPhone 5 was launched in Korea. The respondents were considered to have some knowledge of the iPhone 5 before the survey because its launch was already announced and advertisements and promotional campaigns were frequently observed through various channels, including the website of Apple and mass media. However, some new characteristics of the iPhone 5 in terms of its performance, function, and design were introduced before the survey for about 30 minutes. This introduction was via showing the respondents the video which was made by Apple with the researcher's explaining new features of the iPhone 5.

<Table 2> Measurement Instruments

Construct	ID	Item	Reference
Perceived Aesthetics	AE1	The iPhone 5 is beautiful.	Kim *et al.*, [2011]
	AE2	The iPhone 5 is lovely.	
	AE3	The iPhone 5 is aesthetically appealing.	
	AE4	The iPhone 5 has attractive aesthetic feature.	
Perceived Playfulness	PP1	Using the iPhone 5 would give me enjoyment.	Moon and Kim [2001]
	PP2	Using the iPhone 5 would give me fun.	
	PP3	Using the iPhone 5 would stimulate my curiosity.	
	PP4	Using the iPhone 5 would arouse my imagination.	
	PP5	Using the iPhone 5 would make me absorbed.	
Perceived Usefulness	PU1	The iPhone 5 would improve the efficiency of what I want to do.	Davis *et al.* [1989]
	PU2	The iPhone 5 would improve the productivity of what I want to do.	
	PU3	The iPhone 5 would heighten the performance of what I want to do.	
	PU4	The iPhone 5 would make what I want to do easier.	
	PU5	The iPhone 5 would make what I want to do effective.	
	PU6	The iPhone 5 would be useful.	
Self-Presentation	SS1	The iPhone 5 would enhance my self-presentation ability to others.	Sweeney and Soutar [2001]
	SS2	The iPhone 5 would improve my self-presentation ability to others.	
	SS3	The iPhone 5 would make a good impression on others.	
	SS4	The iPhone 5 would improve the way I am perceived.	

The measurement items for the constructs were adopted from previous studies (see <Table 2>). The dependent variable, purchase intentions, was measured using one item: "Do you intend to buy the iPhone 5?" The questionnaire was translated from English into Korean, and all items were measured on a five-point Likert-type scale ranging from "strongly disagree" (1) to "strongly agree" (7).

Ⅴ. Data Analysis

The data were analyzed using the partial least squares (PLS) method. As shown in <Table 3>, all items loaded on their proposed factors [Gefen and Straub, 2005]. The composite reliability and the average variance extracted (AVE) were greater than 0.72 and 0.94, respectively, exceeding recommended levels, and the square root of the AVE for each construct exceeded the correlation between the construct and all others as shown in Table 4. These results suggest sufficient convergent validity and discriminant validity.

As shown in <Figure 2>, the R^2 values for perceived usefulness, self-presentation, perceived playfulness, and purchase intentions were 0.287, 0.220, 0.535 and 0.490 respectively. All those values exceeded the critical value of 0.1 [Falk and Miller, 1992]. After the estimation of path coefficients by using the whole sample, the PLS technique was employed using bootstrapping to obtain corresponding t-values. The path co-

efficients from perceived usefulness, perceived playfulness, and self-representation to purchase intentions were 0.251 (t-value = 3.233), 0.345 (t-value = 3.963), and 0.210 (t-value = 3.087), respectively, providing support for H1-H3, respectively, at the 0.001 level. The path coefficients from self-representation to perceived usefulness and perceived playfulness were 0.440 (t-value = 6.773) and 0.396 (t-value = 7.296), respectively,

providing support for H1 and H5, respectively. In addition, the path coefficients from perceived aesthetics to self-representation and perceived playfulness were 0.468 (t-value = 8.145) and 0.163 (t-value f = 8.272), respectively, providing support for H6 and H8, respectively, at a level less than 0.01. The path coefficient from perceived aesthetics to perceived usefulness was 0.163 (t-value = 2.243), providing support for H7 at
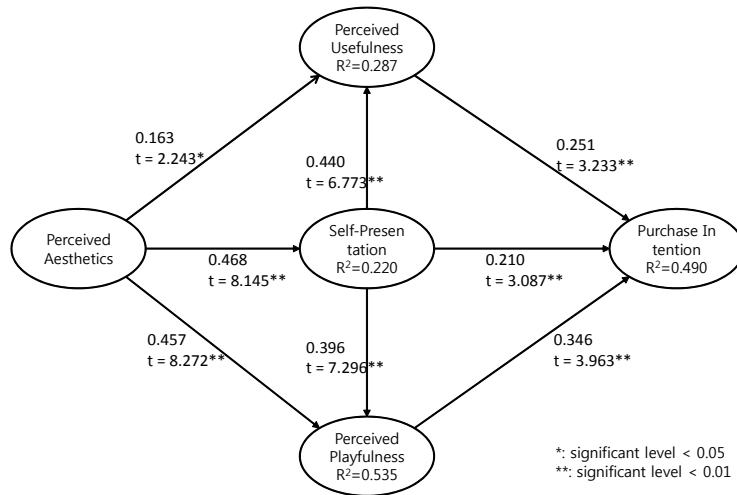
<Table 3> Cross-Loadings of Constructs

	Perceived Aesthetics (AE)	Perceived Playfulness (PP)	Perceived Usefulness (PU)	Self-Presentation (SP)
AE1	0.8907	0.5771	0.3826	0.3611
AE2	0.8753	0.5739	0.3156	0.4216
AE3	0.9442	0.5846	0.3312	0.4514
AE4	0.8955	0.5822	0.3023	0.4542
PP1	0.6033	0.8724	0.6214	0.4934
PP2	0.567	0.9027	0.6465	0.5442
PP3	0.5489	0.8836	0.6471	0.5153
PP4	0.5739	0.882	0.5697	0.585
PP5	0.5335	0.8587	0.5452	0.5468
PU1	0.3194	0.5787	0.8593	0.4251
PU2	0.2787	0.5748	0.8998	0.4491
PU3	0.2695	0.5764	0.8748	0.46
PU4	0.3498	0.634	0.8804	0.4881
PU5	0.2906	0.5571	0.8333	0.4306
PU6	0.3763	0.5938	0.7528	0.3749
SS1	0.4101	0.515	0.4404	0.8913
SS2	0.4616	0.5852	0.4262	0.8821
SS3	0.4005	0.5108	0.4495	0.8824
SS4	0.3849	0.5463	0.5097	0.8837

<Table 4> The AVE and Composite Reliability of Each Construct and Correlations Between Constructs

Construct	AVE	Composite Reliability	AE	PL	PU	SP
Perceived Aesthetics (AE)	0.8132	0.9457	0.9017	0	0	0
Perceived Playfulness (PP)	0.7744	0.9449	0.6426	0.8800	0	0
Perceived Usefulness (PU)	0.7249	0.9403	0.3689	0.3555	0.8514	0
Self-Presentation (SP)	0.783	0.9352	0.4686	0.6104	0.5161	0.8840

Shaded: The Square Root of the AVE.

<Figure 2> Path Analysis

a level less than 0.05.

Ⅵ. Conclusion

This study examines the effects of self-presentation and aesthetics on purchase intentions toward a new smartphone through a research model consisting of eight hypotheses predicated on self-representation and three-level processing theory. For the validation of the model, a sample of 205 university students in Korea was employed, and the data were analyzed using the PLS technique. The results provide support for all the hypotheses.

The results of this study have some important implications for purchase intentions toward smartphones. Theoretically, traditional frameworks for ICT acceptance are enriched by two authoritative theories which are relatively new in ICT theories: self-presentation theory that is a classical sociological theory and three-level processing theory with attractiveness stereotype which are well accepted theories in design

community. These theories would support traditional approaches' limitations which are only appropriate for the side of reasoned actions among human behaviors.

Particularly, the findings and implications of this study are the following four. First, the effects of self-presentation on smartphone adoption were shown. More specifically, two effects on smartphone buying intention were verified: an indirect effect through the beliefs of smartphone, and a direct effect without any beliefs. The indirect effect was verified based on traditional ICT acceptance constructs, perceived usefulness and playfulness, following previous studies which explored various types of self-presentation [Kim *et al*., 2012; Ong *et al*., 2001; Schau and Gilly, 2003]. This implies that self-presentation should be considered as one of external variables that influence the beliefs of using ICT. By contrast, the direct effect, which focuses on technology possession rather than use, was verified based on self-presentation theory. This is a new theoretical contribution of this study. In terms of self-pre-

sentation theory, a smartphone can be considered as a personal front for impression management, which implies that a smartphone may be a tool for representing and enhancing one's identity. In addition to the use of a technology, the possession of it can be a major motive for accepting it. That is, a smartphone can be considered as a fashion item demonstrating that its owner is not only different from others but also included in a distinct and desirable social group [Tzou and Lu, 2009].

Second, aesthetics had a significant effect on purchase intentions. Although the importance of aesthetics has been emphasized in IS contexts [Tractinsky, 2004], the mechanism underlying its effect on ICT adoption remains unclear. For the relationship between perceived aesthetics and purchase intentions, three mediators were considered — self-presentation, perceived usefulness, and perceived playfulness — which are based mainly on the attractiveness stereotype. Given that previous studies have generally focused on direct effects of aesthetics on purchase intentions [Para et al., 2012], these results provide new insights by considering more specific theories

Third, the research model was developed from the perspective of three-level processing theory of human behavior, which requires information processing at three levels: visceral, behavioral, and reflective [Norman, 2004]. The research model adopts aesthetics at the visceral level, perceived usefulness and playfulness at the behavioral level, and self-presentation at the reflective level. Therefore, the model involves the design perspective as well as the IS use perspective. This implies that, in the acceptance of ICT devices, their external appearance may

be as influential as their function and performance, as shown in previous studies [Norman, 2004; Tractinsky, 2004].

In addition to theoretical contribution, this study provides some practical implications to smartphone industry. Smartphone users or consumers look for expressive values in addition to utilitarian benefits. Considering the difficulty in differentiation of utilitarian values, smartphone vendors should focus on expressive values. It is important to understand that what is focused is not only simply beautifying smartphone design. Rather, the aesthetics of smartphone should be toward self-presentation of users. More exactly, it is not enough to provide the same beautiful communication devices to all users, but the customized fashion items with diverse computing powers for which users can do presentation themselves.

This study has some limitations. First, a more comprehensive model is required. Although the principal objective of this study is to investigate the effects of self-presentation on purchase intentions toward smartphones, the research model lacks some important constructs, including the price of smartphones, which may not only directly influence but also moderate the relationship between self-presentation and purchase intentions [Kim et al., 2012]. For example, the effects of self-presentation on purchase intentions may vary according to the price of smartphones. In this regard, the switching cost from the current smartphone to a new one also may be an alternative construct for a more comprehensive model, which was shown in online users' behavior [Ray et al., 2012].

Second, a wider range of respondents should be considered. This study's respondents were

limited to university students, who represent one of the most important user groups. However, the results may vary according to the type of respondent considered. For example, women may be more sensitive to the visual appearance, which may induce a direct effect of aesthetics on purchase intentions. Because older and more experienced individuals may be less sensitive to the appearance of smartphones, they may not show any relationships between aesthetics and perceived usefulness and playfulness. In addition, the effects of aesthetics and self-presentation should be compared based on demographic characteristics such as gender, age, and occupations because this may have interesting implications.

Third, more elaborated controls should be conducted during the survey. For example, this study assumed that the subjects who participated in this study have similar experiences and knowledge about iPhone series, which should have been controlled. Similarly, some control variables such as the reputation or brand effects of Apple should be considered, which may influence the intention as well as the relationships among variables.

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