Influence of an Aesthetically Appealing Product on User's Interest : Investigating on different type of product

Jae-Hwa Lee[a], Seung-Woo Maeng [a], Hyeon-Jeong Suk [*a], Sang-Hoon Jung [b]

[a] KAIST, 335 Gwahangno, Yuseong-gu, Daejeon, South Korea
[b] Mokwon University, Mokwon Gil 21, Seo-gu, Daejeon, South Korea

ABSTRACT

Purpose of present paper is to investigate whether aesthetically appealing products are associated with greater interest (tactual experience, flow and recall of product information) than products are not aesthetically appealing. Another purpose is to observe difference of influence to user interest (tactual experience, flow and recall of product information) between High Involvement Product (mp3 player) and Low Involvement Product (media player). For the experiment, fourteen emotional words were extracted and categorized into 8 aesthetic and 6 usability words. In a preliminary experiment, the subjects freely used three media players and laptop mouse devices each and selected emotional words by a 7-point likert scale to distinguish aesthetic and usability value. In the main experiment, it was hypothesized that users have more interest, flow, and recall more information in the case of the aesthetically appealing product. Therefore, we measured how much time subjects spent using the product and asked them to make an assumption regarding the time spent by the group that has the same usability value. We then examined the time they spent and the gap between the actual and estimated time. We also calculated the amount of menu information recalled via a questionnaire. And also we hypothesized that there are different result of user's interest, flow and recalled information between High Involvement Product (mouse device) and Low Involvement Product (media player), so we observed the gap between two groups of product.

Keywords: Aesthetic, Usability, Tactual Experience, Flow, Recall Memory

1 INTRODUCTION

Importance of special features and convenience of a product when choosing a product was weakened due to the development of technologies. Because of this, the companies their core competence is design like Apple are become succeed in their business [1]. Numerous studies have attempted to prove the design of product, namely the aesthetics of product influences on the impression, evaluation and satisfaction of itself [2,3,4]. According to Sim's study, even if product have some difficult to use, the aesthetics perceived as a critical success factor of product [6].

The purpose of the present paper is to investigate whether aesthetically appealing products are associated with greater interest (tactual experience, flow and recall memory of product) than products are not aesthetically appealing. Another purpose is to observe difference of influence to user's interest between hardware product (mp3 player) and software product (media player).

2 RELATED WORK

Studies on product aesthetics are mostly focused on definition and measurement of aesthetics [7,8].

In this paper, we focused on actual users feeling of product and how users evaluate aesthetics. The other part of Studies on product aesthetics understands of relation between aesthetics and usability. Noam Tractinsky (1997) claimed that the usability of ATM is influenced by aesthetic of interface not by usability [9]. Donald Norman (2004) also claimed that attractive things work better. This implies that aesthetically appealing product has also good usability [10]. In addition, according to Ford & Smith's (1979) study of bank website, users think beautiful website is more comfortable to use than others [11].

Based on these studies, two competing hypotheses can be derived regarding the impact of aesthetic on user interest to product. First, aesthetically appealing product has more users' interest. In this hypothesis, we defined Tactual Experience, Flow and Recall Memory as index of user's interest. A second hypothesis posits hardware type of product has more user interest than software type of product.

Tactual experience is moving with the object, perceiving tactual properties of object, sensing physical sensation, experiencing the affective behavior of the object [12]. And this tactual experience is related to the material, texture,

patterns, geometrical aspect and moving parts of the product. So if product is in a good shape or aesthetically appealing, it could provide good feeling or mood when users have tactual experience.

Studies on memory and its relationship to emotion have tended to focus on memory along the pleasant–unpleasant dimension (e.g., sad, happy, traumatic). For example, Christianson and Loftus found a memory advantage for the occurrence of a traumatic situation, compared to a neutral one. Other studies have found evidence of increased memory capability associated with pleasant materials, relative to neutral ones, so we could define recall memory as index of user's interest [13].

Most psychological models assume that temporal judgments are based on three processing stages. According to the model which has been prominent last twenty years (Church, 1984), the first component consists of an oscillatory pacemaker emitting pulses at a mean constant rate. These pulses are gated into an accumulator when a switch is closed, i.e. when the signal duration is being processed. The content of the accumulator provides the raw material for measuring time (clock stage). The outcome from the accumulator corresponding to the current time is transiently stored in a working memory system for comparison with the content of reference memory, which contains a long-term memory representation of the approximate number of pulses accumulated on past trials (memory stage). Finally, a mechanism compares the current duration values with those in working or reference memory to decide on the adequate temporal response (decision stage) In addition, attentional factors have been shown to play an important role in time perception [14]. This model shows if user gives more attention, perceived time is short. So we can define flow (Time perception) as index of user's interest.

3 EXPERIEMENT

In our previous research, we surveyed user's interest of software product (media player), so at this time we focused on hardware type of product and compared with software type.

3.1 Purpose of Experiement

The aim of this experiment is to see the user interest gap between aesthetically appealing hardware type product which has bad usability and good usable product which is not aesthetically appealing. And compare the result of hardware and software type product's user interest (tactual experience, flow, recall memory). We measure tactual experience time,

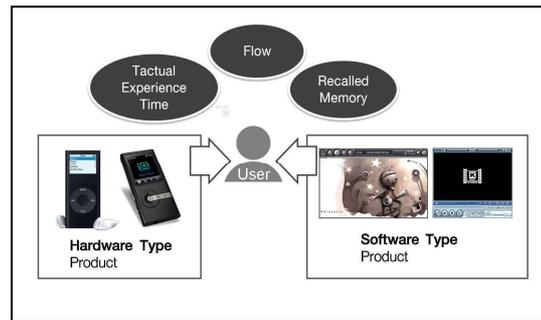flow time and recalled information of product to elicit user's interest.

Figure 1 Purpose of Experiment

3.2 Experiment 1 (Selecting MP3 Player)

Before conducting experiment 2, we choose two representative MP3 players according to the following process.

Figure 2 MP3 Players that are tested in the experiment.

3.2.1 Emotional Words and Subjective Evaluation Scale

The most common method in the psychological measuring method is to indirectly measure the user's emotion by using adjectives. So we use Subjective Evaluation Scale with 8 emotional words to examine product's aesthetic which was suggested by Jeong (2007) [15]. Also we employ Heuristic Evaluation Method with using Heuristic Evaluation Guideline to evaluate product's usability. (Table 1)

Table 1. Evaluation Method investigated in experiment 1.

	Aesthetic	Usability
Method	Subjective Evaluation Scale (8 Emotional	Heuristic Evaluation (Guideline

	Words	Evaluation)
Example of evaluation criteria	pretty polished prestigious clean charming stylish neat supreme	Do the names or icons of menu fit properly with each function? Does the structure of menus of same depth keep consistency?

3.2.2 Evaluation of MP3 player

We evaluate MP3 player's aesthetic and usability scale by employing Subjective Emotional Scale and Heuristic Evaluation Method. Expert Group which is composed of PhD candidates (department of industrial design, KAIST) are suggested to use three MP3 players and scale the aesthetic and usability value within fifteen minutes. Table 2 shows the result of evaluation.

Table 2. Result of MP3 player's aesthetic and usability (N=4, 5-point likert scale)

	i Pod	i river	i Audio
	Mean(SD)	Mean(SD)	Mean(SD)
Aesthetic	4.37 (0.55)	4.03 (0.73)	2.12(0.90)
Usability	2.90 (1.46)	3.14 (1.31)	3.80(1.05)

3.2.3 Selection Result

Finally, we select iPod as aesthetically appealing product which has bad usability and iAudio as a product which has good usability but does not aesthetically appealing. And these two products used as a stimuli in experiment 2.

3.3 Experiment 2 (Measuring Tactual Experience Time, Flow and Recalled Memory of MP3 Player)

3.3.1 Measurement of User's Product Interest

In this experiment, we measured how much time subjects spent touching and observing the products to assess Tactual Experience Time. And we saw the gap between the actual times that subject spent and estimated time which was asked to subject. This indicates how much subject concentrates on the product (Flow). Lastly, memory was measured using a "recall task." Participants were asked to retrospectively recall product's menu and function name seen during experimental task.
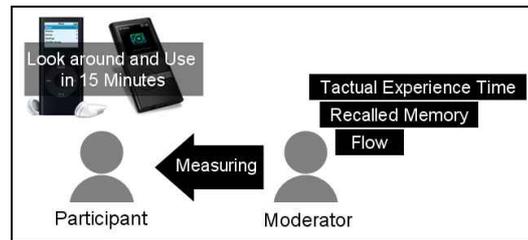

Figure 3 Environment setting of experiment 2.

3.3.2 Experiment Process

At the first step, the subject is given two different MP3 players (iPod, iAudio) in turn. Subject is given two tasks (find and play song, play songs of another group) and conducting in fifteen minutes. During experiment, the time that subject touching and observing the products are measured. After experiment, subject is asked to make an assumption of time they spent to calculate how much subject flow to the product. At the last, subject asked to recall product's menu and function name they remember during experimental task via questionnaire.

3.4 Comparing user's interest of hardware and software type of product

In order to investigate the different impact on user's interest (tactual experience, flow, recall memory) according to different product type (hardware and software type), we compared each product type's tactual experience time, flow time, and recall memory.

4 RESULTS AND DISCUSSION

4.1. Experiment Result

4.1.1 Tactual Experience Time Results

As a result of tactual experience measure, we could see subjects spend more time in touching and observing in case of iPod than iAudio(Table 3a). And the ANOVA statistics indicate that the tactual experience time is significantly different between two MP3 players (Table 3b).

Table 3a. MP3 Player's Tactual Experience Time (N=20, Unit=Sec.)

	i Pod	i Audio
	Mean(SD)	Mean(SD)
Tactual Experience Time	33.85(20.81)	20.50(8.00)

Table 3b. T-Test for MP3 Player's Tactual Experience difference. (N=20, p<0.05)

MP3 player	F	Sig.
i Pod i Audio	5.012	0.031

4.1.2 Flow Results

As a result of Flow measure, we examined subjects concentrate more when they are using iPod than iAudio(Table 4a). And the ANOVA statistics indicate that the Flow is significantly different between two MP3 players. (Table 4b).

Table 4a. MP3 Player's Flow Time (N=20, Unit=Sec.)

	i Pod	i Audio
	Mean(SD)	Mean(SD)
Flow	8.50(60.84)	-44.85(58.99)

Table 4b. T-Test for MP3 Player's Flow difference. (N=20, p<0.001)

MP3 player	F	Sig.
i Pod i Audio	16.846	0.000

4.1.3 Recalled Memory Results

As a result of Recalled measure, we could find subjects recalled more information in case of iPod than iAudio(Table 5).

Table 5. MP3 Player's Recalled Memory (N=20, Unit=Number of Words.)

	i Pod	i Audio
	Mean(SD)	Mean(SD)
Recalled Memory	4.55(2.25)	2.30(1.52)

4.2. Comparison between MP3 Player and Media Player

The results of Mean and Standard Deviation of MP3 Player (iPod, iAudio) and Media Player in terms of flow and recalled memories are shown in Table 6.

Table 6. Comparison between MP3 Player and Media Player in terms of Flow and Recalled Memory

		Flow	Recalled Memory
		Mean(SD)	Mean(SD)
MP3 Player	i Pod	8.50 (60.84)	4.55 (2.25)
	i Audio	-44.85 (58.99)	2.30 (1.52)
Media Player	Adrenalin	41.16 (39.09)	5.61 (2.47)
	KM Player	22.50 (42.47)	3.11 (2.13)

As indicated in Table 6, there is significant difference to user's flow between hardware (MP3 Player) and software (Media Player) product. But significant difference between hardware and software type of product was not found in case that recalled information of product.

4.3. Discussion

Experiment result shows that aesthetically appealing product (MP3 Player) which is not usable makes people to have more tactual experience time, flow and recalled memory than good usability product which is not aesthetically appealing. (Experiment 2) In comparison between hardware and software type of product, aesthetics of hardware type product has more impact on subject's flow than aesthetics of software type product. It can be analyzed that subject concentrate or get observed in the product when they have tangible experience such as touching and holding the product because hardware type of product provides those experience to subject.

5 CONCLUSION

In the present study, we identified product aesthetics was associated with user's interest such as tactual experience, flow and recalled memory. Also we observed that user's interest to product

can be differed by product type (hardware and software type of product).

First, we select MP3 players (Experiment 1) and examine the differences between aesthetically appealing product and good usability product (Experiment 2). And compare with different type of product (software type).

According to the hypothesis our results indicate that aesthetically appealing product is associated more to user's tactual experience time, flow and recalled memory than good usable product (Hypothesis 1). Also comparison analysis show that hardware type of product gives more impact to users on flow (Hypothesis 2). These results imply that product aesthetic can affect to user's interest (tactual experience, flow, and recalled memory) than good usability product and noticeably increased when it provides rich tangible experience like hardware type of product.

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