

THE INFLUENCE OF PRODUCT PRESENTATION MODE AND ACADEMIC MAJOR ON THE MOTIVATION OF HAPTIC

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Article History: Received on 02nd May, Revised on 28th June, Published on 25th August 2018

Abstract

Purpose of the study: This study was aimed to investigate the effect of product presentation mode and education background of subject on willingness of touch, preferences and visual imagery.

Methodology: A total of 60 students were recruited to participate. The independent variables included product presentation mode (physical products, backgrounds removed image, scenario photo) and academic major of subject (design major or management major). Three different kind dependent variables were measured in the study. On physical product condition, one sample was placed in front of subjects at a time. Both on backgrounds removed image and scenario photo conditions, the subjects view experimental photos through a 22-inch LCD screen. They watched the sample item 10 seconds and then were asked to assess subjective questionnaire.

Main Findings: The study results showed that when watching a physical product, the motivation of touch was greatest. The scenario photo generated more positive feelings and resulted in higher preference rating. The willingness of touch, preference and sensory ratings of management major students were higher than design major students.

Applications of this study: The findings of this study can serve as reference for enterprises to properly present products on web pages in order to increase consumers' motivation to touch and preference.

Novelty/Originality of this study: This study reinforces construction of model of motivation to touch, and find that product presentation mode significant affect motivation to touch, preference and novelty feeling.

Keywords: *Willingness of touch, backgrounds removed image, scenario photo, academic major, preferences.*

INTRODUCTION

Tactile stimulation may enhance the positive assessments of products by consumers in many contexts. [Millar & Tesser \(1986\)](#) proposed that elevated emotional values may be derived from the experiences of direct contacts with the products. [Breckler & Wiggins \(1991\)](#) also observed that the degree of consistency between the attitudes and behaviors of consumers increased with more exposures to direct contact experiences. [Peck & Childers \(2003b\)](#) suggested that from the perspectives of the consumers, touching a product allows them to assess it with more confidence and thus increase purchase intention and determination. The motivation of touching has been suggested as a key factor in shopping behaviour that should be taken into account in research ([Carlos et al., 2016](#); [Dholakia et al., 2010](#)). Hence it is evident that tactile sensation and product assessment are highly correlated, but only a number of researches discussed the triggers driving the motivation to touch.

The motivation of touching a product by the consumers prior to touching depends on the personal characteristics and product features. Peck and Childers believed the presence of individual differences in the preferences for tactile senses, and developed a Need for Touch Questionnaire from a validation process involving seven experiments. The Need for Touch (NFT) is defined as the inclination to collect the required information through touch, which can be further classified as Instrumental Dimension and Autotelic Dimension. Instrumental Dimension is the behavior of touch driven by the desire to collect the information required for a specific purchasing task, in other words, it is the action of objective-oriented searching by the consumers to find the required information for a purchase until the final decision has been resolved. In contrast, Autotelic Dimension is the behavior of touch driven by the desire to enjoy or an impulse or irresistible temptation to explore, which can be interpreted simply as a consumer behavior based on the needs for fun, sensory stimulation or joy rather than for purchasing a product ([Peck & Childers, 2003a](#)). [Peck & Childers \(2003b\)](#) discovered from their research that the subjects with high NFT were more familiar in dealing with tactile information and would consider the material properties with priority in their product assessments. Consequently, the lack of direct contact with a product would lead to more struggles and less confidence in the decisions of these subjects. Many other studies also showed that the subjects with high NFT generated higher motivation of touching than those with low NFT while watching the same product ([Chen et al., 2013](#); [Lin & Chen, 2011, 2012a, 2012b](#)).

The motivation of touching would be affected by three different product features. The first is modeling of product, [Chen \(2012\)](#) first observed the behaviours of subjects in the stores, then interviewed them about the reasons for the touch of commodities and finally summarized that the colour, pattern, texture and function characteristics of the objects affect the viewer to touch them. [Lin & Chen \(2011\)](#) compared the influence of different fabric materials (towel quality, yarn quality, nylon, wool and cotton) on the touch motivation. The results showed that the touch motivation triggered by wool is the strongest, followed by towel quality, yarn quality and nylon fabric, and the touch motivation caused by cotton is the weakest. If it is switched to process materials, the touch motivation caused by ceramic and wooden samples is the strongest

and the touch motivation caused by plastic and glass is the weakest (Chen et al., 2013), which shows that materials with natural attributes can trigger stronger touch motivation, compared with artificial materials. Lin & Chen (2012b) compared the influences of the same fabric with different colors (Blue, Red, Green, Brown, White, Pink, Purple, Black and Yellow) on the touch motivation, the subjects reflected that they preferred to touch White and Yellow samples, they wouldn't like to touch Purple and Pink samples, and personal preference for color is one of the affecting factors. Chen et al. (2014) used wood to make samples with 9cm size and different modelings (sphere, cube, tetrahedron, cone and cylinder), the results showed that the touch motivation triggered by the sphere is the strongest, followed by the cylinder, cone and tetrahedron, the touch motivation triggered by the cube is the weakest, and it is easy for a round object to trigger the touch motivation due to its stronger security and smooth feeling; on the contrary, the more pointed objects suggest the risks, which causes people unwilling to touch them. After further matching the modelling with the size for assessment, the research of Chen et al. (2014) included five modelings and three sizes above (3cm, 6cm and 9cm), with a total of 15 samples, and the results found that the touch motivation triggered by samples with 3cm size is the strongest, followed by samples with 6cm size, and the touch motivation triggered by objects with 9cm size is the weakest, as smaller objects make people feel cute and objects with large size show the heavy feeling, which leads to different intensities of touch motivation.

The second feature is outside situation of product, i.e. tactile enticement material. Peck & Wiggins (2006) studied the influences of the content design of persuasive advertising on the viewers; a variety of haptic elements were put in the brochure for the viewer to read in the experiment. The results showed that the addition of haptic elements with excellent feeling in the brochure makes for the enhancement of persuasion degrees. For example, if the feather element is added on books in an advertising that viewers are persuaded to donate to a botanical garden, it can make the viewers have higher willingness to donate time or money to this botanical garden. Lin (2018) put the wooden samples respectively on six kinds of gasket materials (acrylic, lint, wool, wood, metal and flat mirror) so as to assess whether the subjects produce different touch motivations to the samples due to the materials of gaskets. The results showed that the touch motivation triggered by the wool gasket is the strongest, followed by the lint, wool, acrylic and metal and the touch motivation of reflector is the weakest. Lin & Chen (2016) selected three different brands of smart phones and placed them on these six gasket materials, the results showed that the brand of smart phones has no significant influences on the touch motivation, the touch motivation for lint, wool and wood is the strongest and the motivation for metals is the weakest. Above all, the touch motivation of viewers can be triggered through other media, but it depends on the presentation objects in terms of what kind of materials are more suitable.

The third feature is product presentation mode. It can be distinguished by directly viewing the physical product or watching it through photos. Holbrook (1983) used a sweater as the sample for an experiment and discovered that the subjects relied heavily on tactile information to assess the product. Hence it was recommended to provide actual products for assessments rather than presenting only the visual information with images. Recent studies have also pointed out that compared to viewing pictures of products through the screen, the assessment process of physical products can make consumers more willing to buy, and the satisfaction of the purchase process is also higher (Carlos et al., 2016). Even so, due to the diversification of shopping channels in recent years, consumers can now purchase goods via catalogs, the Internet, television and other media rather than buying them at physical stores. Specifically, the Internet provides consumers with large amounts of information and decision assistance tools, including access, search, select, compare and evaluate alternatives (Häubl & Trifts 2000). Compared to text-only descriptions, the attention and satisfaction of consumers would be more affected by product photos in shopping websites (Djamasbi et al., 2010). Moreover, the purchase willingness of consumers is higher while using interactive website (Schlosser 2003). Leiss et al. (1997) points out that product images consist of three types of codes: product, person, and scene. The adoption and proportional distribution of the three types of codes will present different atmospheres and appeals, which will have different effects on consumers. If there is only product in the picture, it can be called context-independent picture or backgrounds removed image of product. If the picture contains a person or a scene, it can be called contextualized picture or scenario photo of product. It can be further classified into scenario photos of use and atmosphere. In the image of the former, product use is presented. In the latter, product is placed in the decorated place and it creates special atmosphere by lighting and decoration. The results of Liang et al. (2011) indicate that subjects' preference for scenario photo is better than backgrounds removed image. However, when the consumer's purchase plan is over time, backgrounds removed image are more convincing than scenario photo (Hernandez et al., 2015). Lee (2016) suggested that famous brands could use scenario photo on product images, and products with lower brand awareness should use two types of images to represent products.

However, the Internet, television and other media are inherently limited to images or sounds in communicating visual or auditory properties of products while the delivery of texture, hardness, weight or other tactile information of products are even more difficult. In comparison to physical products, do backgrounds removed image or scenario photo result in consumers' same preference or trigger willingness of touch? It should be further explored. Therefore, this study further investigates the influences of the product presentation mode on the motivation to touch and analyzes the differences between various education background of the subjects in-depth. The findings from this research will not only contribute to the understanding of the underlying mechanisms of the motivation to touch, but can also be applied to product design and marketing strategy to transform the motivation to touch into motivation to buy.

METHODOLOGY

Subjects

Sixty university students (30 men and 30 women) voluntarily participated in this study. The mean age was 22.1 years for the men and 22.7 years for the women. Subjects were divided into two groups based on their academic majors. Thirty (15 men, 15 women) subjects enrolled in the Department of Craft and Design were classified in the design major group. Thirty (15 men, 15 women) who were the Department of Logistics management students were classified in the management major group.

Experimental Design and Procedure

A two-factor repeated-measures experimental design with academic major (design and management) as the factors, product presentation mode (physical products, backgrounds removed image, scenario photo) as the repeated factor was employed. 6 sample models, all made of wood, were used in the study. The backgrounds removed image and scenario photo of sample models used in this experiment are illustrated in Figure 1 and Figure 2.

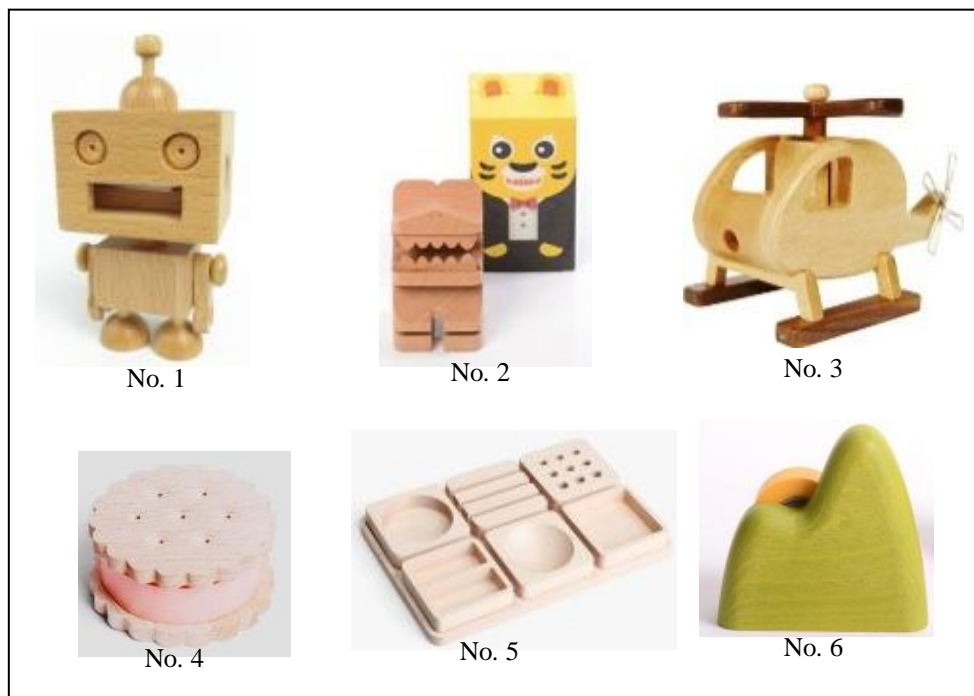


Fig. 1: The backgrounds removed image of sample models used in this experiment

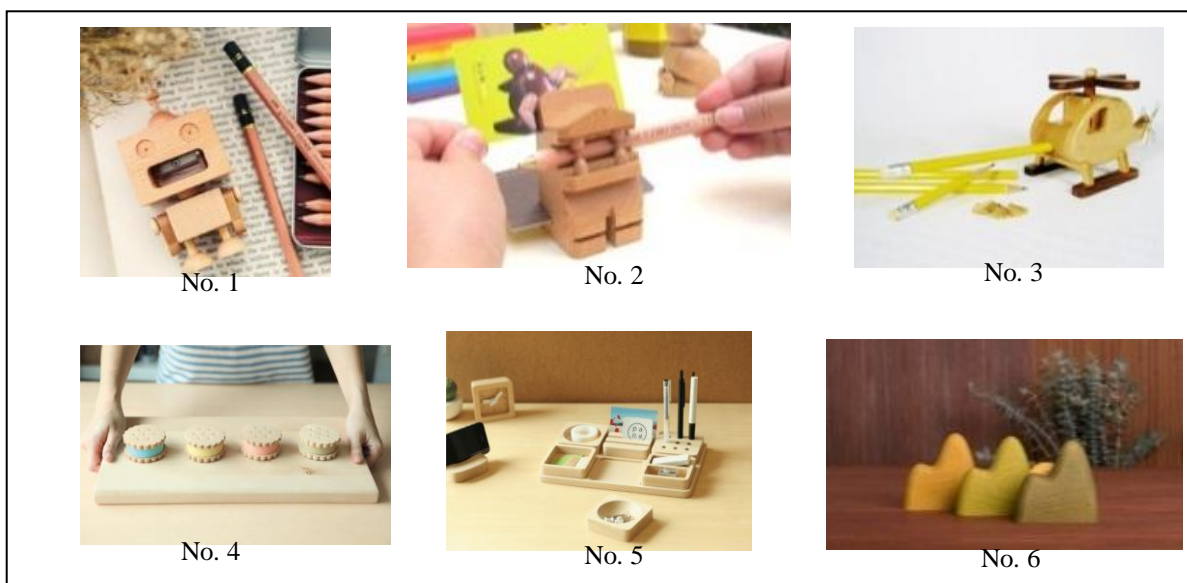


Fig. 2: The scenario photo of sample models used in this experiment

The dependent variables of the experiment were the levels of motivation to touch a specific sample (1 being “very undesirable”; 3 being “average desirability”; 5 being “very desirable”); the levels of preferences for a specific sample (1 being “very unappealing”; 3 being “average appeal”; 5 being “very appealing”); and 10 sets of sensory descriptions (Its tactile seems comfortable, It is affinity, It is novelty, It is beauty, It is cute, It is delicate, It is good quality, It is slippery, I want to play it, I want to feel tactile impression) each ranked on a scale of five grades (1 being “strongly disagree”; 3 being “agree”; 5 being “strongly agree”).

Experiment was conducted under normal day light illumination. Before the experiment, the researcher explained the purpose and procedure to the subjects. After that, on physical product condition, one sample was placed in front of subjects at a time. They watched the sample item 10 seconds and then were asked to assess subjective willingness of touch, preference and 13 sets of sensory descriptions questionnaire based on its visual appearance without tactile interaction. Both on backgrounds removed image and scenario photo conditions, the subjects randomly view experimental photos through a 22-inch LCD screen (label ASUS, model VW228) and fill in the subjective questionnaire. The 18 treatment combinations were randomized for each subject and completed within 30 minutes.

RESULTS

Results of the Average and Variance Analysis

Analysis of variance (ANOVA) was performed to evaluate the academic major and product presentation mode effects. Tables 1 present the mean values of measures for the independent variables. The table indicates that the academic major of individual subjects present statistically significant influences on the motivation to touch ($p < .01$), preferences ($p < .05$) and seven sensory descriptions. In terms of the average values, the motivation to touch and preferences for the group with management major ranked higher compared to the group with Design major and the sample models were perceived as “Its tactile seems comfortable”, “It is novelty”, “It is delicate”, “It is good quality”, “It is slippery”, “I want to play it”, and “I want to feel tactile impression”. The reason might be that design major students have more experience with the products which are not the novelty. They have less intention to play them. Besides, they are more familiar with woods and it lowers their intention to learn the surface texture of the material. Hence, motivation to touch and preference are lower. On the contrary, management major students rarely have experience with the products. Model, function and material of samples are generally interesting for them. They intend to touch, play and perceive the texture of these products. Interestingly, design major students receive more training related to models of objects and product aesthetics and their demand for beauty should normally be different from management major students. However, the result reveals that these two groups of students show similar perception of beauty and cuteness of samples. Thus, it seems that everyone has consistent standard of aesthetics of products.

Table 1 also indicates that the product presentation mode statistically significant influences on the motivation to touch ($p < .05$), preferences ($p < .05$) and the sensory descriptions of “It is novelty” ($p < .05$). The Duncan grouping results indicate that the motivation to touch can be classified into three groups. The first group, with the highest motivation is for physical product (score of 3.84). The second group is scenario photo (score of 3.71) and the third is backgrounds removed image (score of 3.44). The result of preference is different to motivation. The group of higher preference is scenario photo (score of 3.66), and the lower preference group include physical product (score of 3.49) and backgrounds removed image (score of 3.38). The result of sensory descriptions of “It is novelty” is similar to preferences. It is interesting to note physical product. It has higher motivation to touch but lower score of preference and feeling of “It is novelty”. Although presentation mode is not significantly different in other visual perception adjectives, in terms of means, scores of scenario photo and physical sample are similar. They are higher than backgrounds removed image. Thus, physical products result in subjects’ motivation to touch. However, scenario photo creates more positive perception effect of products and subjects’ preference is higher.

Table 1. Results of the various measured variables in the average and variance analysis of the levels of each factor.

	Academic major		Product presentation mode		
	Design	Management	Physical product	Scenario photo	Backgrounds removed image
Motivation and Preference					
Motivation to Touch	3.46	3.87	3.84^a	3.71^b	3.44^c
Subjective preference	3.34	3.68	3.49^b	3.66^a	3.38^b
Sensory descriptions (1 point – 5point)					
Its tactile seems comfortable	3.46	3.75	3.66	3.63	3.53
It is affinity	3.56	3.63	3.63	3.65	3.50
It is novelty	3.37	3.81	3.54^b	3.73^a	3.49^b
It is beauty	3.18	3.26	3.23	3.25	3.18
It is cute	3.58	3.71	3.64	3.71	3.57
It is delicate	3.36	3.78	3.57	3.61	3.54
It is good quality	3.33	3.87	3.61	3.66	3.52

It is slippery	3.37	3.70	3.56	3.55	3.49
I want to play it	3.56	3.92	3.79	3.78	3.65
I want to feel tactile impression	3.49	3.83	3.70	3.70	3.57

a, b, c: Duncan grouping code; Bold indicates significant differences between levels of a factor for that measure

Multiple Regression Analysis for the Motivation to Touch

This study obtains two regression models using a forward stepwise searching procedure (Table 2 and Table 3). The Table 2 shows the model to be significant as indicated by the overall F-statistic ($p < .001$). The regression model explains 62 percent of the variation in the dependent variable, motivation to touch, as indicated by the adjusted R^2 value. Moreover, the standardized partial regression coefficient of the subjective preference is 0.31, greater than that of the sense of "Its tactile seems comfortable" (0.27) and lower than the sense of "I want to play it" (0.33). The regression model of motivation shows that increase in subjective preference, the sense of "I want to play it", and the sense of "Its tactile seems comfortable" followed by an increase in the motivation to touch. On the other hand, the Table 3 shows the model to be statistically significant ($p < .001$) with the coefficient of determination (R^2) 0.65 for predicting subjective preference. The subjective preference was mainly affected by the senses of "It is novelty", "It is affinity", and "It is beauty". Therefore, the subjective preference increased was followed the rating of novelty feeling, affinity feeling, and beauty feeling, and then the motivation to touch was increased.

Table 2. Regression equations for motivation to touch

Variables	Unstandardized coefficients	Std error	Standardized coefficients	t-value	Significance p <
Constant	0.37	0.08		4.47	0
I want to play it	0.33	0.03	0.35	12.63	0
Preference	0.31	0.03	0.31	11.22	0
Its tactile seems comfortable	0.27	0.03	0.24	10.08	0

Notes: $F_{3,1076}=581.02$; $p < .001$; Adj $R^2 = 0.62$

Table 3. Regression equations for motivation to subjective preference

Variables	Unstandardized coefficients	Std error	Standardized coefficients	t-value	Significance p <
Constant	0.3	0.07		4.05	0
It is novelty	0.35	0.02	0.37	14.88	0
It is affinity	0.30	0.03	0.30	12.14	0
It is beauty	0.27	0.03	0.26	10.41	0

Notes: $F_{3,1076}=661.10$; $p < .001$; Adj $R^2 = 0.65$

CONCLUSION

This study explored the effects of physical products, backgrounds removed images of samples and scenario photos of samples on design major and management major students' motivation to touch, preference and visual imagery. According to experimental result, presentation mode only shows significant difference in three items: motivation to touch, preference and novelty. Physical products result in subjects' higher motivation to touch. Nevertheless, scenario photo leads to other positive feeling of products and enhances subjects' preference. Effect of backgrounds removed image is lower than scenario photo. In addition, management major students' motivation to touch after seeing the samples is higher than that of design major students. Scores of preference and other visual perception are significantly higher. Thus, the same products lead to different feelings of students with different academic backgrounds. Based on multiple regression analysis result, with the increase of preference for samples, the intention to play them is higher. When surface texture of objects is seemingly better, subjects' motivation to touch will be higher. Result of this study not only reinforces construction of model of motivation to touch, but also serve as reference for enterprises to properly present products on web pages in order to increase consumers' motivation to touch and preference. It suggests useful directions regarding key points of future product design and product sales.

LIMITATION AND STUDY FORWARD

This study has several constraints. First, the number of subjects was small and the age group was narrow, making the results more applicable to 22- to 25-year-old adults. The second is the number of samples was small, making the results more applicable to wood stationery. The third is the academic major only include design and management, the results may be different to other academic major subjects.

ACKNOWLEDGEMENT

We thank the Ministry of Science and Technology under Grant MOST 104-2221-E-144 -001 for funding this study. We also thank the Carpenter Brother & Sister, Technology Co Ltd, pana objects, Mufun Design Studio for providing experimental photos.

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