Exploring Human Brands in Online Shopping: An Eye-Tracking Approach

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Abstract. Trust plays a critical role in facilitating transactions in the online shopping environment. Accordingly, various methods have been considered to enhance customer trust. Human branding has received increased attention and played a vital role in business in recent years because it has great impacts on our daily life and consumption. The purpose of this paper is to investigate the effect of applying human brands in an online shopping environment with an emphasis on product type and human brand attachment. The study combines the eye-tracking technique with a self-reported questionnaire to gain a deeper understanding of the effect of human branding in the online shopping process. The results showed that both the product type and level of human brand attachment have significant influences on a customer's visual attention as well as perceived trust towards the product.

Keywords: Human brand, Human brand attachment, Product type, Eye-tracking, Trust.

1 Introduction

Trust is more important in the context of e-commerce than in traditional commerce because online services and products are not typically verifiable immediately. The lack of customer trust towards products and vendors is regarded as an inhibitor in the online shopping environment. Customers report that online stores are impersonal, and there is wide agreement that e-commerce suffers from a lack of customer trust [1-3]. Indeed, research has shown that high levels of customer trust encourage online purchase intentions [4] and help retain online customers [5], while a lack of customer trust is the main reason why individuals do not shop online [6]. Therefore, various methods are applied to build customer trust in the online shopping environment, such as enhancing social presence, providing online reviews, and employing humanoid agents. In the impersonal online environment, using images or an agent that looks like a human is regarded as an effective way to enhance trust.

Human branding has recently received increased attention and played a critical role in business because it has a great influence on our daily life and consumption.

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Companies are dedicated to managing human brands and building emotional bonds with customers. Feelings linked to attachment are fundamental to strong brand relationships [7], so attachment is an important factor when considering human brands.

Although there are many kinds of products in online shopping malls, they can generally be categorized into two types of products: functional products and symbolic products. While a functional product has utilitarian functions, symbolic products appeal to a customer's affective gratification. The different values of each product lead to different approaches in the decision to make a purchase [8]. Furthermore, these different types of products may be influenced by human brands in an online shopping environment.

The eye-tracking method has recently been used to record and analyze individuals' visual attention by tracing eyesight. It has been employed in various fields such as usability, marketing, cognitive and behavioral psychology, and so on. In this respect, the aim of this study is to employ the eye-tracking technique to examine the effect of applying human brands in the online shopping environment with an emphasis on product type and human brand attachment.

2 Literature Review

2.1 E-Commerce and Efforts to Cope with Its Impediments

Survey researchers argue that the most significant impediments of online shopping are the absence of pleasurable experiences, social interaction, and personal consultation [9]. In addition, the lack of trust in products and vendors is also regarded as an inhibitor in online malls. Accordingly, researchers have attempted to find and explore ways to facilitate e-commerce. One approach is to examine website characteristics that could enhance users' perceptions of social presence, which describes the extent to which a medium is perceived as sociable, warm, personal, or intimate when used to interact with others: socially rich text contents and personalized greetings [2], emotive text and pictures of humans [10], functionalities such as live chat and online reviews [11], and website aesthetics and emotional appeal for the user [12]. Another approach is to investigate the sales assistant functions to improve customers' shopping experiences, such as a software-based product recommendation agent [13], virtual salesperson [3], or avatar sales agent [14].

2.2 Human Brands and Human Brand Attachment

A brand can be broadly defined as a trade marketable visual or verbal piece of information that identifies a product or service. Traditionally, brands have been related to products, services, or organizations, but today researchers appreciate that brands can also be human [15]. The human brand refers "to any well-known persona who is the subject of marketing communication efforts" (Thomson, 2006, p. 104), and has an intangible asset such as a social reputation, image, or credibility. For example, celebrity brands (e.g., Super Junior), athlete brands (e.g., Yuna Kim), and CEO brands (e.g., Steve Jobs) can be thought of as human brands. Today, celebrities are regarded not only as famous entertainers or sports stars in people's minds, but also as a human brand. Accordingly, companies spend great sums each year in an effort to

establish psychological connections between customers and human brands.

Meanwhile, human brand attachment can be referred to as a person's target-specific emotional bond with a human brand [15]. An attachment is a type of strong relationship that people usually first experience as children with their parents. A person immersed in such an emotionally significant relationship normally perceives the relationship partner as irreplaceable [16]. When these types of relationships are experienced in reference to human brands, they are typically referred to as "secondary object" attachments.

2.3 Functional and Symbolic Products

In general, most products have both functional and symbolic dimensions. Some products, however, are basically made for the purpose of instrumental or utilitarian reasons, or for the customers' consummatory affective gratification only [17]. A functional product has the value of pertaining to the utilitarian functions a product can perform (its use). Products differ in the degree to which they are suited to perform their basic utilitarian function [18], such as communication or transportation, but also in terms of quality and features. On the contrary, symbolic products may convey the experiential aspects of consumption, such as customer fantasies, feelings, and fun; the kind of person someone is or wants to be; or to express their (ideal) self-image to themselves and others [18]. The benefits relate to underlying needs for social approval or personal expression and outer-directed self-esteem.

3 Development of Hypotheses

Jillapalli and Wilcox (2010) revealed that strong attachments influence trust and satisfaction [19]. In addition, Thomson (2006) pointed out that strong attachments are predictive of satisfying, trusting, and committed relationships [15]. Hence, we propose the following hypotheses.

Hypothesis 1: Human brand attachment influences customers' visual attention.

Hypothesis 2: Human brand attachment positively influences customers' perceived product trust.

When customers make a decision to choose functional products, they are required to engage in cognitive information processing. By contrast, the purchase motivation of a symbolic product is more influenced by the customer's experiential affect associated with the product than by his or her cognitive information processing. While the choice of functional products depends on a customer's evaluation of product attributes, that of symbolic products depends upon the symbolic factors [8]. Thus, we propose the following hypotheses.

Hypothesis 3: The product type influences customers' perceived product trust.

Hypothesis 4: The product type influences customers' visual attention.

4 Methods

4.1 Pre-test

The human brands and products used in this experiment were chosen by conducting a pretest with surveys and in-depth interviews with 11 participants. First, we listed 23 human brands and 16 products based on the results of interviews with undergraduate and graduate students. Then, we selected the 10 most favorable human brands by investigating the respondents' preferences for each and selected 2 products by conducting a pre-survey with items on product type, with responses to questions on a 5-point scale. A laptop was selected as the functional product ($mean_{functional}$ = 4.82, $mean_{symbolic}$ = 2.24) and perfume as the symbolic product ($mean_{functional}$ = 1.68, $mean_{symbolic}$ = 4.00). In this study, Amazon (www.amazon.com) was chosen as the Internet shopping mall through in-depth interviews.

4.2 Participants

For this experiment, 40 healthy subjects were recruited at a college in South Korea. We received written informed consent from all participants, who were all college students, and each subject was paid 10,000 Korean won for participation. Among the participants, 2 subjects were eliminated from the study because of corrupted data. Data from a total of 38 subjects (16 men and 22 women) were thus employed in this study. About 74% were 21 to 28 years old, and 24% were 20 years or younger. Consequently, the subjects were divided into two groups (high human brand attachment group, n = 16; low human brand attachment group, n = 22).

4.3 Materials and Design

We made a screen with detailed product descriptions consisting of the product, message, and human brand domain for this experiment. The product domain represents the product for advertising, and the message domain is the text presented with the product, including abstractly written sentences about the product concept and a detailed explanation. Finally, the human brand domain uses celebrities as brands with images to enhance consumer interest. Stimuli for the experiment with human brands include a total of 20 types of screen with detailed product descriptions made by combining 10 human brands and 2 product types.

The experimental design used to examine the effect of applying human brands in an online shopping mall environment was a two-factor repeated measure design with two levels for each factor. The first factor of the design was a within-factor of product type, and the second was a between-factor of level of human brand attachment.

4.4 Apparatus

The online shopping mall screen shots were presented on a 19-inch monitor with a resolution of 1024 x 768 pixels. The Tobii Eye Tracker™ (X120) was employed to record participants' eye movement during the experiment, and data were treated by Tobii Studio. Eye Tracker can measure participants' visual attention, which consists of eyeball fixation and saccade. Eyeball fixation shows how long a participant's eyes stay fixed on a certain area and saccade is the momentary movement between eyeball

fixations. Fixations were detected at 100 ms or above, an appropriate cut-off point for tracking eye movements in this experiment [20].

4.5 Procedures

The experimental procedure was as follows. First, before starting this experiment, we asked participants to select their favorite human brand out of the 10 brands listed. Second, a calibration test was conducted to correctly trace each participant's eye movements before starting the experiment. Third, two shopping processes (functional and symbolic) were sequentially displayed to participants as shown in Figure 1 to simulate the real environment for online shopping. For time control of a participant's visual attention measure, each screen was presented for 10 seconds. Lastly, participants were asked to complete the questionnaire and were interviewed.

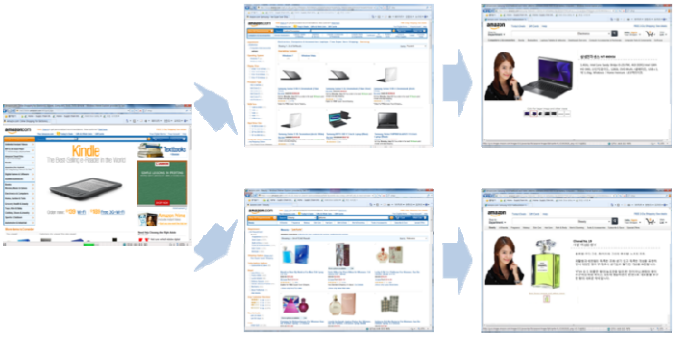


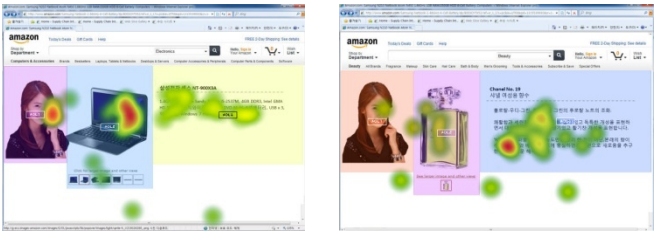
Fig. 1. Experiment process of shopping products (functional / symbolic)

5 Results

5.1 Effects of Product Type and Human Brand Attachment on Visual Attention

Figure 2 is the heat map visualized by Tobii Eye Tracker. It shows the average fixation length of participants, which can be interpreted as the degree of visual attention for each consideration factor, or the area of interest (AOI). With respect to the product AOI (middle part), it is intuitively known that the functional product got more visual attention than the symbolic product.

Repeated measures analysis of variance was employed to statistically verify the heat map results. The eye movement data on fixation length for the product AOI were analyzed to investigate the effect of product type and human brand attachment on visual attention. As shown in Table 1, the main effect of product type was significant ($F(1,36)=3.456$, $p<0.10$), with the functional product (mean=1.651) having significantly longer fixation length than the symbolic product (mean=1.272). In addition, the results showed a marginally significant main effect of human brand attachment ($F(1,36)=3.221$, $p<0.10$). The group of high human brand attachment (mean=1.705) had relatively longer fixation length than the low human brand attachment group (mean=1.217), thus validating H1 and H2, respectively.



(a) Functional product (b) Symbolic product

Fig. 2. Heat map measured by eye-tracking

Table 1. ANOVA on product area

Source	Sum of Squares	df	Mean Square	F
Product type (A)	2.664	1	2.664	3.456^{+}
Human brand attachment (B)	4.416	1	4.416	3.221^{+}
A x B	.485	1	.485	.629

**NOTE: Statistically significant at $^{+}p<0.10$*

5.2 Effects of Product Type and Human Brand Attachment on Perceived Product Trust

The results showed two main effects and no interaction effect as shown in Table 2 and Figure 3, which indicated similar results with the case of visual attention. The main effect of product type was significant ($F(1,36) = 8.922$, $p<0.01$), with functional product (mean = 4.968) having significantly greater perceived trust towards the product as compared with the symbolic product (mean = 4.379). Moreover, results revealed a marginally significant main effect of human brand attachment ($F(1,36)=3.994$, $p<0.10$). The group of high human brand attachment (mean=4.968) had relatively higher perceived product trust as compared with the low human brand attachment group (mean = 4.379). These results support H3 and H4, respectively.

Table 2. ANOVA of perceived product trust

Source	Sum of Squares	df	Mean Square	F
Product type (A)	12.668	1	12.668	8.922**
Human brand attachment (B)	6.445	1	6.445	3.994^{+}
A x B	.087	1	.087	.062

**NOTE: Statistically significant at $^{+}p<0.10$, $^{**}p<0.01$*

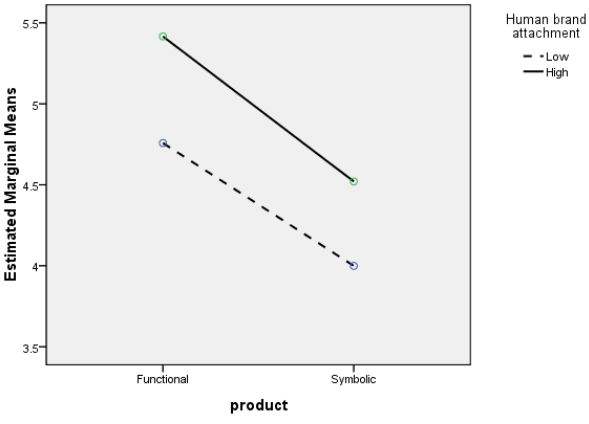


Fig. 3. Perceived trust towards product

6 Discussion

In this study we investigated an effective way to use human brands in the online shopping context with eye tracking technology. The results of the current study led to the following findings. First, there is a significant difference in visual attention to functional products and symbolic products. Specifically, the fixation length when viewing a functional product is much longer than that when viewing a symbolic product. In other words, customers may look at every attribute of the functional product in detail when processing information during the purchase, but intuitively perceive the image and meaning of a symbolic product in a more holistic way. Another difference is found in the level of human brand attachment. Customers with relatively high human brand attachment have a long fixation length for products compared with customers who have low attachment. This could be because customers with strong human brand attachment for the product presented on the screen are more likely to have greater visual attention to the product when there are detailed product descriptions. Second, the results reveal that the product type influences a customer's perceived trust regarding a product. According to our results, customers have more trust for functional products than for symbolic products. In general, individuals are more likely to build trust in tangible, specific things as compared with intangible, abstract, and non-specific things. Furthermore, symbolic products are generally used to express one's self-image [18, 21-23], so purchasing the wrong symbolic products could result in high social and psychological risk. As compared with symbolic products, functional products have a relatively lower level of social and psychological risk. Therefore, considering the potential risk of purchasing the wrong product, it appears that building trust towards a symbolic product is harder than building trust towards a functional product. Additionally, the results indicate that there is a

significant difference in perceived product trust between the levels of human brand attachment. Specifically, when customers have higher attachment towards a human brand, they build more trust towards the product. That is, strong attachments influence trust [19] and are predictive of trusting, committed relationships [15], as we expected. Finally, in terms of product type and the level of human brand attachment, the results of perceived product trust are very much like those of a customer's visual attention. In other words, when customers fix their eyes on a certain product for a longer time, they also perceive more trust towards the product. It is highly probable that looking at something favorably for a certain amount of time might bring trust up in one's mind.

One of this paper's contributions is employing a multi-method approach, a self-reported questionnaire and eye-movement data, to gain a deeper understanding of the data, especially when observing complex phenomenon, for which customers themselves may not be aware of their reactions. Nonetheless, this research has limitations of a relatively small sample size and the use of a sample of college students, which may not be representative of the general population. Future researchers could utilize experiments to include and analyze two other areas of the screen for detailed product descriptions, such as the human brand area and message area, which could result in additional insights and generalized experimental results.

7 Concluding Remarks

Considering human brands as a facilitation method for online shopping, it would be favorable to use human brands for which customers are more likely to have attachment in order to attract a customer's visual attention and build customer trust towards the product. In addition, it would be helpful to consider product type, such as functional product and symbolic product, in order to effectively enhance product trust.

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References

1. Brynjolfsson, E., Smith, M.: Frictionless Commerce? A Comparison of Internet and Conventional Retailers. Management Science 46, 563–585 (2000)
2. Gefen, D., Straub, D.W.: Managing user trust in B2C e-Services. e-Service Journal 2, 7–24 (2003)
3. Komiak, S.Y.X., Weiquan, W., Benbasat, I.: Trust Building in Virtual Salespersons Versus in Human Salespersons: Similarities and Differences. e-Service Journal 3, 49–63 (2004)
4. Gefen, D.: e-Commerce: The role of familiarity and trust. Omega 28, 725–737 (2000)

5. Reichheld, F., Schefter, P.: E-loyalty: your secret weapon on the web. Harvard Business Review 78, 105–113 (2000)
6. Hoffman, D.L., Novak, T.P., Peralta, M.A.: Building consumer trust online. Communications of the ACM 42, 80–85 (1999)
7. Fournier, S.: Consumers and Their Brands: Developing Relationship Theory in Consumer Research. Journal of Consumer Research 24, 343–373 (1998)
8. Hirschman, E.C.: Symbolism and Technology as Sources for the Generation of Innovations. Advances in Consumer Research 9, 537–541 (1982)
9. Barlow, A.K.J., Siddiqui, N.Q., Mannion, M.: Development in Information and Communication Technologies for Retail Marketing Channels. International Journal of Retail and Distribution Management 32, 157–163 (2004)
10. Hassanein, K., Head, M.: The impact of infusing social presence in the web interface: an investigation across different products. International Journal of Electronic Commerce 10, 31–55 (2006)
11. Cyr, D., Hassanein, K., Head, M., Ivanov, A.: The role of social presence in establishing loyalty in e-Service environments. Interacting with Computers 19, 43–56 (2007)
12. Cyr, D., Head, M., Larios, H., Pan, B.: Exploring Human Images In Website Design: A Multi-Method Approach. MIS Quarterly 33, 539–566 (2009)
13. Qiu, L., Benbasat, I.: Evaluating Anthropomorphic Product Recommendation Agents: A Social Relationship Perspective to Designing Information Systems. Journal of Management Information Systems 25, 145–181 (2009)
14. Holzwarth, M., Janiszewski, C., Neumann, M.M.: The Influence of Avatars on Online Consumer Shopping Behavior. American Marketing Association 70, 19–36 (2006)
15. Thomson, M.: Human brands: Investigating antecedents to consumers' strong attachments to celebrities. Journal of Marketing 70, 104–119 (2006)
16. Hazan, C., Shaver, P.R.: Attachment as an Organizational Framework for Research on Close Relationships. Psychological Inquiry 5, 1–22 (1994)
17. Batra, R., Ahtola, O.T.: Measuring the Hedonic and Utilitarian Sources of Consumer Attitudes. Marketing Letters 2, 159–170 (1990)
18. Strahilevitz, M., Myers, J.G.: Donations to Charity as Purchase Incentives: How Well They Work Depend on What You Are Trying to Sell. Journal of Consumer Research 24, 434–446 (1998)
19. Jillapalli, R.K., Wilcox, J.B.: Professor Brand Advocacy: Do Brand Relationships Matter? Journal of Marketing Education 32, 328–340 (2010)
20. Inhoff, A.W., Radach, R.: Definition and computation of oculomotor measures in the study of cognitive processes. In: Underwood, G. (ed.) Eye Guidance in Reading, Driving and Scene Perception, pp. 29–53. Elsevier, New York (1998)
21. Belk, R.W.: Possessions and the Extended Self. Journal of Consumer Research 15, 139 (1988)
22. Holbrook, M.B., Hirschman, E.C.: The experiential aspects of consumption: consumer fantasies, feelings, and fun. Journal of Consumer Research 9, 132–140 (1982)
23. Solomon, M.R.: The Role of Products as Social Stimuli: A Symbolic Interactionism Perspective. Journal of Consumer Research 10, 319–329 (1983)