The Deep Impression of Smartphone Brand on the Customers’ Decision Making

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Abstract

The purpose of this study was to identify customers’ impression of different smartphone brands. After reviewing the literature, this study chose the four top-selling smartphone vendors according to IDC Statistics (IDC Worldwide Mobile Phone Tracker, 2012), and 64 subjects participated in the study. A questionnaire survey and the eye tracking technique were adopted to carry out a comprehensive analysis of the decision making of consumers. The content of the questionnaire survey included product system, product exterior, and brand appearance. The results of the survey showed that 71\% of the subjects were willing to spend more money to buy their favorite brand of smartphone. In addition, the analysis of the eye tracking data indicated some significant differences in the sequential position of viewing the phones’ logos. The viewing of most subjects focused on the smartphone brand rather than on the product specifications and price. To sum up, this study suggests that the brand logo is the most important criterion when consumers make a decision to buy a product. The myth impression of the specific brand existed prior to the decision to buy the product. Therefore, we believe that the amount of sales of the product depends mostly on the brand. Although the subjects were able to make objective choices regarding the various specifications, they still chose their favorite brand regardless of their objective considerations. Implications of the study findings are discussed.

1. Introduction

People make many decisions in their life, most of which may be made without much explicit deliberation. Mobile phone buying is normal behavior in our life, but which factors affect the purchase decision is still not clear. When people choose to buy a particular brand of phone, most make the decision based on a variety of reasons, including individual interest, the exterior, functions, impression of the brand, etc. However, what is the main reason affecting such choices? What are the impacts on the decision-making of the different specifications? In this study, we investigate these questions in depth.

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications, and consumer technology markets. According to the
IDC worldwide quarterly mobile phone tracker, the worldwide mobile phone market grew 1% year over year in 2012. A different vendor sells state-of-the-art or easy-to-use smartphones, and the market is gradually expanding. A survey of the IDC statistics provided us with strategic insights to choose the top four phone brands for which we designed a decision-making questionnaire. The content of the questionnaire included sixteen smartphone specifications, allowing us to explore which specifications affect smartphone purchase decision making.

2. Literature review

The smartphone plays an important role in the life of many people today. A small handheld device, it is capable of many functions which makes it much like using a computer. It is widely used for sharing messages, connecting with others, browsing information, and shopping. Cassavoy (2012) defines the smartphone as a device that supports us in performing computer-type functions, such as sending or receiving e-mails, writing, or taking pictures, etc. Besides the available functions, the brand of smartphone also plays a vital role in consumer buying decisions. Brand loyalty means consumers tend to pay high prices for a certain brand within the same product group and recommend that brand to the people around them (Giddens, 2002). When customers are satisfied, they show commitment to continuously buying the same brand and become loyal customers (Ballantyne et al., 2006). In this study, we aim to identify whether the behaviors of continuously buying products of the same brand are because of brand loyalty or other features.

Second, Cronin and Taylor (1992) found that the satisfaction felt after the first trial of a brand directed customers to prefer the same brand in their decisions to repurchase it. Oliver (2003) investigated the relationship between customer satisfaction and brand loyalty, and found a positive relationship between these two variables. That is, if consumers feel satisfied with the first experience of buying, they will possibly decide to buy the same smartphone or series of products of the same brand in the future. In addition, Berry (2000) suggested that trust is very important for satisfaction. As different consumers prefer different brands, it is of interest to explore what factors other than brand may affect them in making opposite decisions regarding smartphone purchases. Consumers can exhibit continuance commitment in the absence of alternatives or in the case of finding that one brand is cheaper. Han (1989) found a significant relationship between beliefs and attitudes and the brand in the decision to use a particular phone. The results reveal that consumers will rely on the image of the country of origin, and beliefs and attitudes towards the brand when they are not familiar with or have no knowledge of a product. On the other hand, if consumers are familiar with or have more knowledge of the product, these factors seem to have less impact (Tseng, 2010). Moreover, Erickson, Johansson and Chao (1984) also found that the image of the country of origin influences both the beliefs and attitudes of consumers. Consumers will also be influenced by the quality value of the product, making it a key factor in their final purchase decision. To sum up, smartphone consumers are strongly influenced by brand, and a clear brand image can increase confidence in the consumers’ purchase. In this study, we investigate the behaviors of consumers’ decision making when deciding to buy a smartphone.

Third, in order to explore their decision-making behaviors, we collected the consumers’ viewing specification scan paths for different brands of smartphone using the eye tracking technique. Just and Carpenter (1976, 1984) proposed a correlation between what a person is looking at and what he/she is thinking. Based on this assumption, Anderson et al. (2004) hypothesized that eye movement could be studied to understand cognition. Therefore, this study further tracks the viewing behaviors while consumers gaze at smartphone specifications and make decisions. The eye tracking data can help us gain more insights into the decision making process when purchasing a smartphone.

Based on the literature review, this study adopted a questionnaire survey and eye-tracking recording to collect relevant information on decision-making. We focus on the consumers’ deep impression of the different smartphone brands and their viewing behaviors to identify which factors induced the results.

3. Methodology

3.1 Participants
The study chose the four top-selling smartphone vendors according to IDC Statistics (IDC Worldwide Mobile Phone Tracker, 2012) and sixty-four subjects participated in this study. In the questionnaire, the specifications of the phones were divided into 16 items for the purpose of comparison. There are eighty-four people who voluntarily participated in this study (mean age=22±1). All of the volunteers completed the questionnaire first. We then took twenty participants at random to take a visual acuity test and calibration test on the computer screen. They all had normal or corrected-to-normal vision.

3.2 Research design and procedure

The subjects observed experimental images which contained four phone specifications (Memory, Camera Specifications, Screen Size, and Price) and which were divided into four blocks. The analysis of the eye tracking data indicated some significant differences in the sequential position of viewing the logo. In the study, the eye-tracking experiment was designed to find the process by which subjects observed each specification and their preferences. The first phase was the calibration test to ensure the reliability of the eye-movement data. Each participant had to undergo a visual acuity test to calibrate the position of the eye. In the second phase, we demonstrated the appearance of the four mobile phones and collected the data showing what the viewers were focused on. In the third phase, the screen showed the four different phones’ specifications and the subjects chose the one they preferred. In the fourth phase, we used a post-test interview and Likert scale questionnaire to ascertain the decision-making processes. During the viewing, the subjects chose the best one in any single participation about four phones, but they finally still chose their favorite brand. Combining the eye-movement data and interview data, we can analyze how individuals observe and make decisions.

4. Results

According to the statistical analysis, to distinguish which elements are the key points affecting people’s choice of smartphone, this study lists 15 phone specification items using a Likert scale to calculate the score by gender and brand. From the gender perspective, we found that both males and females usually paid more attention to the phone’s main display resolution and exterior. They almost had the same viewpoint on other specifications. Therefore, there was no significant gender difference on any of the fifteen specifications, although according to Table 1, the specification of most interest to the female participants was the exterior and they had less interest in RAM & ROM, whereas although the males were also interested in the exterior, they showed less interest in the video features.

On the other hand, the brand perspective had very different results. The score for the Main Display Resolution item was significantly different for the four brands of smartphone (F=3.43, p< .05, $\eta^2 = 0.12$) with APPLE’s score higher than that of NOKIA for this item. In addition, the score for the Model item also showed significant difference (F=3.67, p< .05, $\eta^2 = 0.13$), with APPLE’s score higher than that of HTC. Moreover, the score for the Price item was significantly different among brands (F=3.83, p< .05, $\eta^2 = 0.13$), with HTC’s score higher than that of SAMSUNG. The score for the Exterior item was also significantly different (F=3.67, p< .05, $\eta^2 = 0.13$), with APPLE’s score higher than that of both HTC and SAMSUNG. Therefore, from the score viewpoint, participants who were interested in HTC paid more attention to the item of price; those who were interested in APPLE paid more
attention to the item of exterior; those interested in SAMSUNG paid more attention to the item of Main Display Size, and those who were interested in NOKIA paid more attention to both the price and exterior items.

According to these results, this study infers that consumers’ interest in a brand of smartphone will affect their purchase decision making. The study also provides evidence from the eye-tracking analysis supporting the influence of interest in a particular brand. We explain the viewing behavior based on the eye-movement data analysis and supply additional biological evidence to interpret the process of consumers’ purchase decision making.

Table 1. The ANOVA test among gender and brands

<table>
<thead>
<tr>
<th>Gender</th>
<th>Brand</th>
<th>M/SD</th>
<th>M/SD</th>
<th>M/SD</th>
<th>M/SD</th>
<th>M/SD</th>
<th>M/SD</th>
<th>Gender</th>
<th>Brand</th>
<th>F</th>
<th>F</th>
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<tr>
<td>male</td>
<td>APPLE</td>
<td>4.34/0.12</td>
<td>4.53/0.10</td>
<td>4.26/0.14</td>
<td>3.80/0.28</td>
<td>4.24/0.13</td>
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<td>3.43*</td>
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<td>HTC</td>
<td>4.29/0.11</td>
<td>4.18/0.09</td>
<td>4.21/0.13</td>
<td>4.40/0.26</td>
<td>4.43/0.13</td>
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<td></td>
<td>NOKIA</td>
<td>3.71/0.16</td>
<td>3.97/0.14</td>
<td>3.68/0.20</td>
<td>4.00/0.39</td>
<td>3.67/0.19</td>
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<td></td>
<td>SAMSUNG</td>
<td>3.83/0.21</td>
<td>3.71/0.18</td>
<td>3.47/0.25</td>
<td>4.00/0.50</td>
<td>3.62/0.24</td>
<td>1.78</td>
<td>0.29</td>
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<td>4.42/0.16</td>
<td>4.37/0.14</td>
<td>4.05/0.19</td>
<td>4.40/0.38</td>
<td>4.00/0.18</td>
<td>0.42</td>
<td>1.13</td>
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<td>Battery Type and Size</td>
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<td>3.95/0.15</td>
<td>3.63/0.21</td>
<td>4.00/0.43</td>
<td>4.10/0.20</td>
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<td>Camera</td>
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<td>4.05/0.21</td>
<td>3.40/0.41</td>
<td>4.10/0.20</td>
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<td>1.45</td>
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<td>4.16/0.13</td>
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<td>3.95/0.17</td>
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<td>3.40/0.46</td>
<td>4.10/0.22</td>
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<td>Video Features</td>
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<td>4.08/0.14</td>
<td>3.79/0.20</td>
<td>4.60/0.39</td>
<td>3.95/0.19</td>
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<td>1.37</td>
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<td>Processor Speed, Type</td>
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<td>4.05/0.13</td>
<td>3.68/0.19</td>
<td>4.00/0.37</td>
<td>3.95/0.18</td>
<td>2.80</td>
<td>0.99</td>
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<td>Model</td>
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<td>4.03/0.14</td>
<td>3.26/0.20</td>
<td>3.80/0.39</td>
<td>3.57/0.19</td>
<td>1.25</td>
<td>3.67*</td>
<td>A&gt;H</td>
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<td></td>
<td>Price</td>
<td>4.29/0.14</td>
<td>4.26/0.12</td>
<td>4.63/0.17</td>
<td>4.80/0.33</td>
<td>3.95/0.16</td>
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<td>3.83*</td>
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<td>4.68/0.11</td>
<td>4.16/0.15</td>
<td>4.80/0.30</td>
<td>4.29/0.15</td>
<td>1.33</td>
<td>3.67*</td>
<td>A&gt;H</td>
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* p < .05

According to the eye-movement data analysis, this study analyzed the scan paths of viewing the screen to explore viewing behaviors while subjects looked at the specifications of the different phone brands. The screen was mainly divided into two types of Area of Interest (AOI), Brand and Specification. The purpose of the AOI setting was to capture the viewing behavior while subjects were considering the different specifications of the phone brands. Therefore, Figure 2 shows the statistical results for the first six viewing positions in the areas of brand and specification. It shows that most of the subjects paid attention to the area of brand as their second fixation point. Almost all of them gazed at the specification area first because the calibration point “+” is in the center of the screen; that is, when the questionnaire stimulus was displayed after the calibration point, the subjects started to pay attention to the specification area. This is why the first fixation point results in a high percent of viewing of the specification area. However, the second fixation point results in the opposite trend of percentage of viewing the two areas. When the subjects shifted their attention from the first to the second fixation point, the chart shows that the percentage of viewing position on the brand area was higher than that on the specification area. This result reveals that most of the subjects tended to shift their attention to the brand at the beginning. The shifting of attention to the phone brand provides clear biological evidence of the interest in the phone brand. If they did not care about the brand of phone, they would compare the specification differences directly. However, the results display that the subjects tended to find their favorite brand first and then view the specification or compare the specifications of the various brands.
Figure 2. The shifting of viewing position for the first six fixation points

On the other hand, Figure 3 shows the heat map of viewing the screen, including the smartphone brands and their specifications. The red area reveals that there are longer fixation durations on specific areas, so we can know which areas of the screen received more attention. The left image of Figure 3 displays that the subject viewed the iPhone logo and paid attention to the HTC and iPhone logos. In addition, he gazed at the HTC specification “135g” for a long time. Therefore, we compared this subject’s interview protocol with the heat map and found that he said “I love iPhone because of the nice design, but I also love my country. So I want to see the specification of HTC”. Regarding the above cross-analysis of the eye-movement data and interview protocol, we found that the decision making viewing behaviours were reflected in the specific areas of the screen. In the beginning, the subjects pay more attention to the specific brand to show their interest in or loyalty to the brand. However, they also make their decision according to different specifications other than brand loyalty. Thus, we can find inconsistencies in the areas of brand and specification, such as on the right of Figure 3. The subject gazed for longer at the Nokia logo, but he compared the specifications of APPLE, HTC and SAMSUNG. This subject said, “I love NOKIA but I want to buy a new smartphone. I think the main display resolution is important for me.” Hence, we inferred that the subject made a decision to buy according to subjective ideas, and not to brand loyalty.

Figure 3. Aggregate heat map showing areas of highest fixation duration
5. Discussion

According to these results from the questionnaire survey and eye tracking analysis, the statistical survey investigates the main effects on consumers’ decision making by gender and brand loyalty. In this study, most of the subjects made a decision to buy a smartphone based on the main display resolution, model, price and exterior specifications of the smartphone, with no significant differences between the genders. However, for the specifications, we found that there are significant differences according to brand loyalty, with the viewing behaviours regarding the brand and specification areas revealing a trend based on brand loyalty. More than half of the subjects tended to view the brand logo which they loved most and then compared the specifications of the different smartphones. This finding inspired us to further explore the reasons inducing this outcome. According to the interview protocols, we found that brand loyalty affects the viewing behaviours, but the consumers also make different decisions based on comparison of the specifications of the different brands. To sum up, based on the Internet survey and eye-movement data, we suggest that brand loyalty is an important criterion when consumers make a decision to purchase a smartphone. The myth impression of a specific smartphone brand existed prior to the purchase decision. We therefore believe that the amount of sales of the product depends mostly on the brand. Although the subjects were able to maintain an objective choice regarding the various specifications, they still chose their favourite brand despite their objective considerations.

References