Preliminary study on the effects of visual complexity on consumers response to product innovations

Peiyao Cheng, PhD Student, School of Design, The Hong Kong Polytechnic University
Ruth Mugge, Associate Professor, Faculty of Industrial Design Engineering, The Delft University of Technology

Background

Nowadays, it has been widely acknowledged that innovations have made a significant contribution to companies' performances. However, high failure rate of launching product innovations suggests high risks involved (Gourville, 2006). Among these risks, consumers' complicated attitudes are one of it. On the one hand, consumers can be attracted by the benefits brought along with innovation. On the other hand, the complexity of innovations can also keep consumers away (Calantone, Chan, & Cui, 2006) because the knowledge of understanding innovations goes beyond consumers' current knowledge. To facilitate consumers' understanding of product innovation, previous studies have suggested several effective communication strategies, such as analogical learning, mental stimulation and visualization (Gregan-Paxton, et al., 2002; Feiereisen, Wong, & Broderick, 2008; Zhao, Hoeffler & Dahl, 2009). However, other factors that influence consumers' understanding of product innovations are largely neglected. Product appearance is such a factor (Talke, et al., 2009; Mugge & Dahl, 2013; Veryzer, 1995). Therefore, this study aims to fill in this gap by investigating the role of product appearances during facilitating consumers' understanding of product innovations. Specifically, this study focuses on visual complexity of product appearances.

Visual Complexity in Product Design

Figure 1 Design Complexity in Product Design

Visual complexity depends on the number of independent elements and arrangements of these elements (Berlyne, 1970). To further capture the essence of visual complexity, visual complexity is differentiated between feature complexity and design complexity in advertisements (Pieters, Wedel, & Batra, 2010). Feature complexity is related to the details and variations contained in visual features, such as color, luminance and edges. One objective way of measuring it is the size of the image in computer. Design complexity, also termed as structured complexity, refers to the elaborated designs in terms of the shapes, objects, and patterns that advertisements contain. Specifically, six principles were developed to measure the design complexity: quantity of objects, irregularity of objects, dissimilarity of objects, detail of objects, asymmetry of object arrangements and irregularity of object arrangements. To further understand the effects of design complexity in product design, examples have been collected and analyzed according to these six principles, as shown in figure 1. Visual complex products may not be preferred aesthetically (Creusen, Veryzer, & Schoormans, 2010), but it has the potential of facilitating consumers' understanding by creating certain expectations of functions. For instance, Dyson DC01 is communicated through a complicated product appearance with a large number of details and strong contrasts. From the complex product appearance, consumers may get more clues on functions, which may help consumers understand the benefits of the product innovation. Moreover, the effects of visual complexity can be different for incremental innovations and radical innovations. To further understand how visual complexity of product innovations influence consumer response, an experiment is designed as follows.

Method

This study will conduct an experiment to investigate consumers' responses to product innovations with different levels of visual complexity. To do so, 2 * 2 * 3 mixed experiment is designed, with type of innovation and level of visual complexity as between factor, and product category as within factor. Stimuli of two types of innovation, incremental and radical innovation, will be created by textual descriptions. Simple and complex product appearances are designed as stimuli. Three product categories are selected: handheld vacuum cleaner, hair dryer and iron. Pre-tests will be conducted to check the successfulness of created stimuli. The created preliminary stimuli of product appearances are shown in figure 2.

Figure 2 Preliminary created stimuli

What's Next?

Two pretests will be conducted. Then, main study will be performed to examine the effects of visual complexity of product innovations on consumers' reponses. Next, collected data can be analyzed.