



# A Gestalt–Minimalism-based decision-making model for evaluating product form design

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## ABSTRACT

This paper presents a novel methodology for dealing with decision-making problems in product design fields. The purpose of this study is to evaluate product form design in terms of the perspectives of Gestalt psychology and Minimalist principles. Unlike traditional AHP methods, the proposed decision-making model uses distinct mathematical tools to establish priorities for the criteria and synthesize the evaluation results. A case study was conducted to illustrate the practicability of this proposed model. It has shown a credible result. In addition to product form design, this model can be applied to related design fields, such as plane design and other visual design.

**Relevance to industry:** Product form design is a creative process that involves complex visual perceptions. It is very important to develop an effective decision support system for designers to deal with problems concerning the consumers' psychological preferences toward product forms. As Gestalt psychology and Minimalist principles provide an important perspective on visual perception, it is appropriate to apply these principles in assessing the quality of product form design.

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## 1. Introduction

There is a bivariate correlation between “structure” and “ornamentation” in product design. Structure refers to the essentials of creating product functions by means of science, technology, material, and engineering, while ornamentation refers to the measures to advance product value and to communicate product images to the users through cognitive, cultural, and aesthetic practices. With the incredibly fast-paced advances being made in information technology, computers have emerged into the mainstream of present day society. Influenced by the concepts of structuralization and modularization in computer technologies, current product design has been trending toward singularized structure and integrated function. For example, there is no obvious structure difference among video recorders, VCD players, and DVD players. Also, current mobile phones integrate many functions into a telephone such as a digital camera, radio, MP3 player, PDA and GPS. The design trend of singularized structure and integrated function makes formal ornamentation more difficult and complicated, no matter what designers believe about the contention of “form follows function” or that of “form and function are one”. Product design must not only satisfy the physical rationality of the functions, but it must focus on consumers'

psychological needs toward product forms (Chuang et al., 2001; McDonagh et al., 2002; Chang et al., 2007; Hong et al., 2008; Chang and Wu, 2009; Seva and Helander, 2009; Zhai et al., 2009; Lee and Chang, 2010; Yang, 2011). Crilly et al. (2004) proposed three dimensions of consumer responses to product forms: aesthetic impression, semantic interpretation, and symbolic association. Aesthetic impression is defined as the sensation that results from the perception of attractiveness in products. It is based on the well known “what is beautiful is good” phenomenon from social psychology and market research. Semantic interpretation is regarded as what a product is seen to say about its function, mode-of-use and qualities, implying forms independent of the aesthetic preferences of customers as well as those of their own. Symbolic association is the perception of what a product says about its owner or user, stressing the importance of personal and social significance attached to the design (Lewalski, 1988; Crozier, 1994; Baxter, 1995; Cupchik, 1999; Norman, 2004).

Nowadays product design involves a wide variety of high technology, extending the functional structure domains of products. In the ornamental aspects, there is an ever-increasing trend toward simplicity over complexity. Luxury but simplicity has gradually set the fashion for formal aesthetics of products. Minimalism describes a design style where the subject is reduced to its necessary elements. It is rooted in the reductive aspects of Modernism, and is often interpreted as a reaction against Abstract Expressionism and a bridge to post-modern art practices (Fried, 1967). Minimalist design places

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