

# Chapter 31

## The Backbone of Key Successful Branding Strategies in the 21<sup>st</sup> Century: Innovation in Design Technology, Decision Making on Product Quality, and Collaborative Communications

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### ABSTRACT

*In the 21st century, the awareness of applying recent advanced intelligent technologies to promote a firm's brand image is the key to the success of expanding its business. Such implication demands efforts in strategic planning and massive investment from the top management team. However, most researches on branding strategies are narrowed to advertisement or classical marketing. Insufficient research on the backbone of making key successful branding strategies to effectively apply the intelligent technologies hinders the development of branding strategies. This chapter identifies three aspects: innovation in design technology, decision making on product quality, and collaborative communications to be the critical elements of the backbone. The methodology utilizes the power of the advanced computational technologies to generate innovative designs in a collaborative communication framework. Decision making on the quality of designs is monitored with EG-Kano reference models. Four case studies demonstrate that the backbone has potentials leading to ever-greater economic benefits.*

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## INTRODUCTION

In the 21<sup>st</sup> century, one of the key successful criteria of a company to expand its business relies on promoting its brand. The awareness of applying recent advanced intelligent technologies to promote a firm's brand image is therefore becoming significant. Such implication demands efforts in strategic planning from the top management. Massive investment is sought to support all necessary activities related to determining and implementing branding strategies. However, most researches on branding strategies narrowed to advertisement or classical marketing. Insufficient research on the backbone of making key successful branding strategies to effectively apply the intelligent technologies hinders the development of branding strategies.

In this research, the important aspects affecting the brand strategies are treated as the backbone. Three aspects: 1) Innovative capabilities in design technology, 2) Decision making capabilities on quality of products, and 3) Collaborative communications among clients, top management team of the product developers, designers and engineers are identified to be the critical elements of the backbone. The methodology utilizes the power of the advanced computational technologies to generate innovative designs in a collaborative communication framework. Decision making on the quality of designs is monitored with EG-Kano reference models.

For the first aspect, creativity is the key successful factor and a global priority in engineering industries. Creating innovative designs involves research on new algorithms in addressing the design issues. Shape formulation is a critical issue in product and engineering design. Over thirty years of research on design computational algorithms like shape grammars has established a solid theoretic foundation in shape formulation for various domains like architecture, structural and engineering design. A comprehensive survey which compared the development processes, application areas and interaction features of different shape grammar approaches are given by Chase (2002). Recently, research in exploring shape grammar approaches to product and engineering design has received more attention by many researchers. For instance, Cagan et al. developed the coffeemaker grammar, motorcycle grammar, hood panel grammar and vehicle grammar (Agarwal et al., 1998, McCormack et al., 2002, Pugliese et al., 2002 and Orsborn et al., 2006). However, most of these approaches do not address the flexibility in modifying the grammar rules within the system. As a result, the generative capability of shape grammars is hindered to generate innovative product designs.

For the second aspect, a critical issue in creating innovative designs is affected by product design strategies on the quality of product. The ability for a product developer to successfully launch useful products to a market is tied to the company's product design strategies, thus making profitability. Due to the complexity of the perception and expectations on new product design from the various customers and the diverse perspectives of the product developer, any approaches without systematically analyzing these complex criteria to assess decision making on product design strategies are therefore deemed as inappropriate. A systematic approach to determine appropriate product design strategies based on the attributes of product design and customer expectations should therefore be considered by the product developer.

For the third aspect, communications play an important issue in decision making on a firm's strategy in running business. Without effective and accurate communications, wrong decisions of a firm's strategy may eventually be made and result in over budget, loss of revenue, penalties and delay in delivery.

The objectives of this research are to merge these three aspects into a collaborative communication framework: 1) Design a new evolutionary algorithm to dynamically evolve the grammar rules to explore

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