

**The Influence of Product Design on  
Establishing Brand Equity**

**A thesis submitted for the degree of Doctor of Philosophy**

**By**

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# Abstract

This study investigated the role of product design on brand equity by investigating the effect of consumers' perception about product design on brand equity. For this purpose, this research essentially verified the importance of product design on product evaluation. With the verification of the importance of product design, this study examined consumers' perceptions of design and found several generalisable types of design image across product categories. After finding types of design image, in order to verify the importance of consumers' perception of product design on brand equity, this research investigated the effect of the design image which can be formed by the response of product design on brand image and equity.

For the purpose of the research, this study is composed of three empirical studies. In the first step, the effect of design attributes on consumers' product evaluation was investigated. The results show that when the design attribute is provided to consumers, they use this information as an important criterion to evaluate product quality. Moreover, providing the criteria for evaluation of the design attribute enhanced the effect of design attribute on product evaluation. Consumers can pay attention to the design attribute more because consumers process the design attribute information easily by providing the criteria for the evaluation of it.

In the second step, consumers' psychological responses to product design were examined and a framework of design image dimensions and its generalisable 43-item design image scale were developed. Design image is composed of six image dimensions which are uniqueness, aesthetics, utility, femininity, nobleness and compactness.

In the third step, the relationships among design image, brand image and brand equity were investigated, and the effects of design image on brand image and equity were compared between utilitarian and symbolic products. Design image has significant effects on brand image and equity in both products, and design image has a direct effect on brand equity in the symbolic product.

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# Publications

As a direct result of this research, the following paper has been accepted for the Journal of Brand Management:

*The Effect of Evaluation Criteria on Design Attributes and Brand Equity in the Product Evaluation Process*

The following paper has been submitted to the Journal of Brand Management:

*The Measurement and Dimensions of Design Image*

The following paper is being prepared for submission to the Journal of Product and Brand Management:

*The Effect of Design Image on Brand Image and Brand Equity*

# CHAPTER 1 INTRODUCTION

A significant trend of recent marketing research and management is the recognition of brands as key organizational assets. This increased awareness of the importance of brand is caused by the redefinition of market competition and the theoretical change in marketing management. Through the highly valued brand as an asset, a company can create an opportunity in the market through competitive advantages as well as being able to enhance consumer loyalty and make a profit. Therefore, various studies regarding brand equity have been carried out recently (Aaker 1996; Delgado-Ballester and Munuera-Aleman 2005; Kim, Kim and An 2003; Malhotra, Peterson, and Kleiser 1999; Moskowitz et al. 2005; Murphy 1998).

Keller (1993) suggested two general motivations to study brand equity. One is the financially based motivation that is for measuring brand equity for the purpose of corporate accounting (measurement of asset value for balance sheets) or M&A (Barwise et al. 1989; Wentz 1989). The other reason for studying brand equity is the strategy-based motivation, which is for increasing marketing productivity. With high costs, intense competition, and unstable demand in the market, companies make an effort to find a way of increasing the efficiency of marketing activities and reducing costs. Therefore, marketers should have a wider and better understanding of consumer behaviour not only to make a strategic decision for the definition of the target market and the product positioning, but also to make an efficient decision for the marketing mix strategy. Consequently, the most valued asset of a company in order to increase marketing productivity can be the

knowledge about a brand which is formed in consumers' minds. Thus, strategy-based motivation deals with the consumer's cognition of the brand and the behavioural perspective related to brand choice activity.

When the brand equity is approached with this second reason in mind, an important change has to be considered. The important change is that the influence of product design on companies' performances is increasing significantly in the market. When consumers evaluate products, one of the criteria which is considered among the most important factors is design, and design is the most fundamental characteristic of a product. Product design is now firmly established as a strategic and creative tool that enables products to gain competitive advantage by non-price differentiation (Berkowitz 1987; Nussbaum 1988; Terwiesch and Ulrich 2007). In line with this consideration, in recent years, many researchers have attempted to find and explore the importance of design in the marketing area (Berkowitz 1987; Block 1995; Bruce and Whitehead 1988; Cooper and Kleinschmidt 1987; Fabricant 2006; Kotler and Rath 1984; Luo et al. 2008; Nussbaum 1988; Zolli 2004).

Therefore, it is crucial that marketers realize the potential of design to benefit their brand or business. Used wisely, design can increase sales, establish new markets, change consumers' perceptions and improve profitability. Design can make a huge difference as products and services are getting more similar in terms of performance in the market; thus, it can also increase both sales and margins. In line with this increased awareness of the importance of product design, Buxton (2006) suggested that design must be regarded as an investment for the future. He

also suggested that marketers recognize that design can be their main marketing weapon and it could be the biggest single investment they will make for the future. In this overall perspective, product design could be a critical tool for improving brand equity and it could improve product image and brand equity. However, despite the importance of product design, relatively little empirical research which is related to consumers' psychological responses to product design and the relationship between the response to product design and brand equity has been carried out. In particular, empirical studies of product design and consumers' psychological responses are rare, and research which can be widely generalised into consumers' perception of product design has not been investigated in the marketing and design area. Downing (1992) commented that very little research has been conducted that directly explores the nature of the mental image and the implications for its use in design. In order to find out the role of product design on brand equity, it is important that the research regarding consumers' perception of product design is carried out.

Therefore, this study investigates the role of product design on brand equity by investigating the effect of consumers' perception about product design on brand equity. For this purpose, this research verifies the importance of product design on product evaluation basically. With the verification of the importance of product design, this study examined consumers' perceptions of design and found several generalisable types of design image across product categories. After finding types of design image, in order to verify the importance of consumers' perception of product design on brand equity, this research investigated the effect of design image, which can be formed from the response of product design, on brand image

and equity. Moreover, the effect of design image on brand image and brand equity could differ depending on the type of products. In other words, design image could influence brand image and brand equity more in the product category, so that consumers pay more attention to design attributes in their product evaluation process than in the product category. As a result, they consider the functional attribute as the important criteria to evaluate products. For example, functional attributes such as preventing tooth-decay and mouth odour could be more important criteria to evaluate a toothpaste product than other attribute. However, when consumers evaluate jeans with which consumer can express their images, the importance of design could be increased and the design image of product affects brand image and brand equity more. Therefore, this research compares the effect of design image on brand image and brand equity between utilitarian and symbolic product.

In summary, the goals of this research are firstly, to verify the importance of product design on product evaluation compared with the effect of brand on product evaluation; secondly, to find consumers' psychological responses to product design (design image); thirdly, to investigate the effect of the design image on brand image and equity and lastly, to compare the effect of design image on brand image and equity between two kinds of product categories, utilitarian and symbolic.

## **1.1 Aims, Objectives and Research Questions**

### **1.1.1 Aim**

The purpose of this study is to identify the influence of product design on establishing brand equity by verifying the effect of product design on product evaluation by investigating the moderating effect of product design on the relationship between brand and product evaluation, developing a framework of generalisable design image dimensions and the different types of design image that can be distinguished through examination of consumers' perceptions of product design across product categories, and investigating the effect of the design image which can be formed by the response of product design on brand image and equity in the two categories (utilitarian and symbolic).

### **1.1.2 Objectives**

Firstly, identifying the importance of product design in order to create brand equity and the definition and theories of brand equity, brand image and design image and finding the relationships among those variables from the literature review.

Secondly, verifying the influence of product design on product evaluation by investigating the moderating effect of product design on the relationship between brand and product evaluation



Thirdly, finding the general types of design image dimensions and measurement scales through investigating consumers' psychological responses to product design.

Fourthly, investigating the effect of design image on brand image and brand equity and verifying the importance of design image for creating brand equity.

Fifthly, comparing the effect of design image on both brand image and equity between utilitarian and symbolic products.

Lastly, proposing effective methods for creating brand equity using product design and consumers' perceptions of product design.

### **1.1.3 Research Questions**

- Can provision of the design attribute information influence consumers' product evaluation?
- Can providing the design attribute information moderate the effect of brand on consumers' product evaluation?
- Can providing the criteria for evaluation of design attributes information moderate the effect of brand on consumers' product evaluation?
- What are the types of consumers' psychological responses to product design

and how can they be categorized?

- What are the types of design image and measurement scales of it?
- Can design images which are formed by consumers' responses to products influence brand image and equity?
- Can brand image effect brand equity?
- What are the differences of the effects of design image on brand image and brand equity between utilitarian and symbolic products?

## **1.2 Structure of the Thesis**

This thesis contains eight chapters arranged according in the following sequence:

- 1. Chapter 1 (Introduction):** This chapter introduces the key subject area, namely the importance of brand equity and product design, summarizes the key problems and explains the purpose of this research including aim, objectives and research questions.
- 2. Chapter 2 (Literature review):** This chapter reviews the literature concerned with brand equity and key factors for brand equity which are brand image and design image. The main objectives of this chapter are:
  - a) To state the definition, perspectives and theories of brand equity.

- b) To state the definition, elements and types of brand image.
- c) To identify the importance of product design and state the definition and types of design image.

**3. Chapter 3 (Methodology):** This chapter explains the methodology applied to test the hypotheses in each step. Different aspects which are covered in this chapter are:

- a) To state the research strategy.
- b) To state the characteristics of survey research as the main research strategy.
- c) To explain the research process in detail.

**4. Chapter 4 (The First Step):** This chapter verifies the basic assumption of this research which is the importance of product design on product evaluation. To do this, the effect of design attributes on product evaluation is tested by investigating the moderating effect of product design on the relationship between brand and product evaluation. It is very important to verify the basic assumption because the main model of this research, which is the relationship among brand image, design image and brand equity, cannot be tested without the assumption regarding the positive relationship there is between product design and product evaluation.

**5. Chapter 5 (The Second Step):** In order to investigate the main model of this research which is the relationship among design image, brand image and brand equity, types of design image and the scale of each design image type have to be developed. The studies regarding design image and its'

measurement scale has rarely been carried out compared to research regarding brand image, and thus the generalisable measurement scale of design image has not been developed. Therefore, this chapter examines consumers' psychological responses to product design and develops types of design image.

**6. Chapter 6 (The Third Step):** This chapter investigates the main model of this research which is the relationship among design image, brand image and brand equity and compares the relationships in utilitarian and symbolic products using the types of design image which were developed in the second step.

**7. Chapter 7 (Conclusion):** This chapter summarizes the main issue of this study and points out the conclusion derived with respect to the following points:

- a) The study findings and the proposed model.
- b) The theoretical implications and application of the study findings from a managerial perspective.

**8. Chapter 8 (Limitations and Future Research):** This chapter indicates limitations of the research and suggests recommendations for future research.

Figure 1.1 shows the structure of the thesis. For the aim and objectives of the research, firstly, the literature regarding brand equity, brand image and product design is reviewed, and secondly, three empirical studies are conducted. In the first empirical study, the importance of product design on product evaluation is

verified. In the second step, consumers' psychological responses to product design are examined and types of design image are developed. Finally, the relationships between design image, brand image and brand equity are investigated. With the results of three empirical studies, implications of the research are suggested. Finally, limitations of this research are discussed and the issues for future research are discussed.

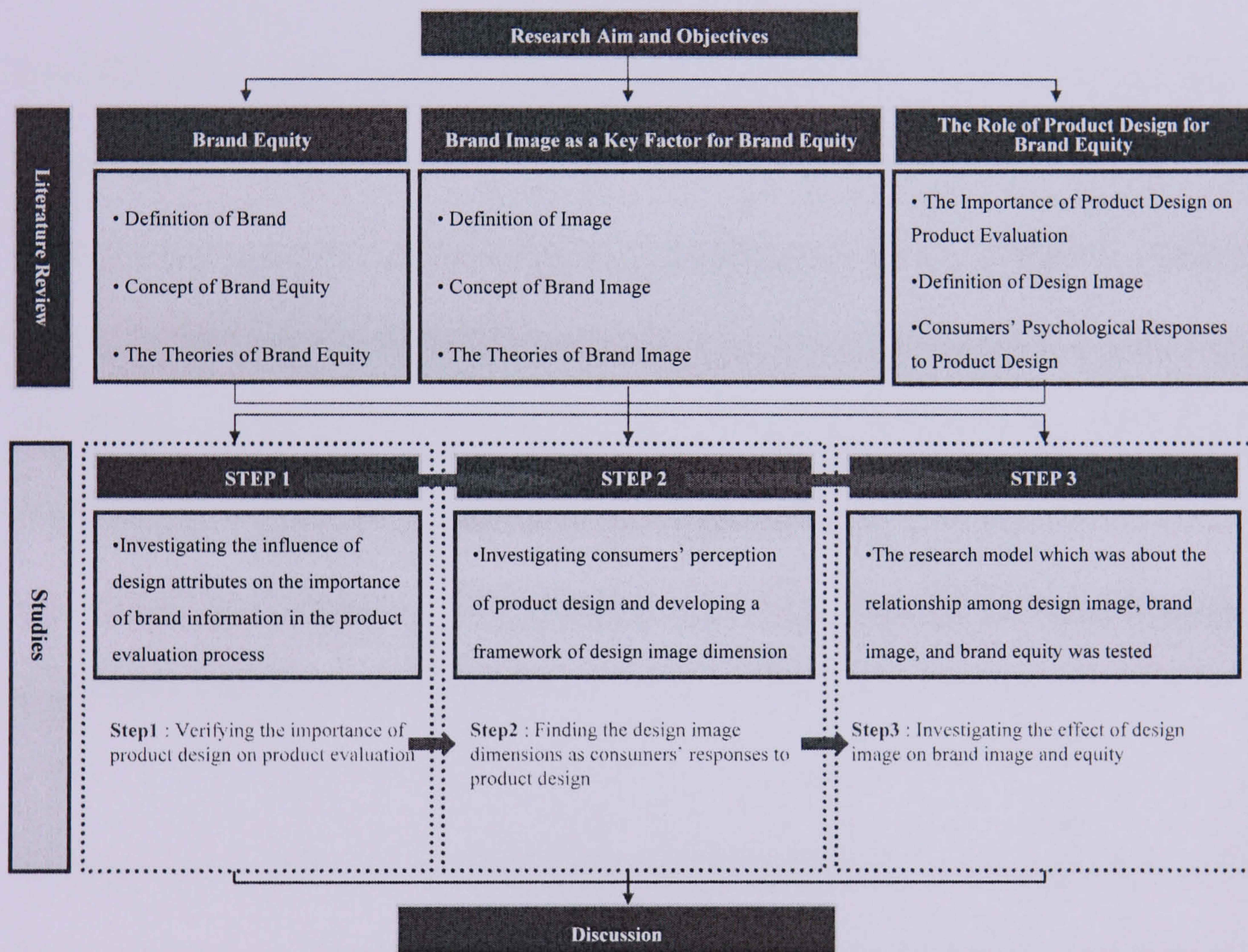


Figure 1.1 The Structure of the Thesis

## CHAPTER 2 LITERATURE REVIEW

The definitions and established theories for brand equity are examined in this chapter to understand the meanings and values of brand equity. Although a consensual theory for brand equity has not been established, there are various perspectives about how brand equity is to be measured and managed.

Therefore, how brand equity is formed and how it performs can be made clearer by examining the various approaches for the concept of brand equity and describing the elements which are related to the preceding elements of brand equity. In addition, important key preceding factors of brand equity, brand image and design image, which are the key issues for creating brand equity in this research, are discussed here.

### 2.1 The Construct of Brand

Although the beginnings of “brand” can be traced back to the hieroglyphs of the early Egyptian civilization, and the medieval history also records that brand is used as a control mechanism to manage guild membership, the etymology of brand is actually originated from the word “brabde” in Norwegian. In addition, the word “brand” came from marks which stigmatize (brand) cattle and horses to show who owns them. Brand started to be used for the purpose of industrial concerns 100 years ago when brand was exploited to control the retailers’ selling license. Even though brand starts to be used in the category of consuming

products, it has been used these days as vastly and often in a variety of purchase contexts (Biel 1992).

The definition of brand can be approached from various perspectives, depending on a variety of fundamental philosophies and stakeholders' standpoints (Wood 2000). Thus, it can not only be defined across the objectives of brands, but also be described across characteristics of brands. In the next section, this research examines the definitions of brand which are proposed from the existing literature.

The American Marketing Association (1960) defined brand in terms of:

“A name, term, sign, symbol, or design, or a combination of them, intended to identify the goods or services of one seller or group of sellers and to differentiate them from those of competitors”

This approach is criticized as an excessive product-oriented perspective because it placed emphasis on both product differentiation and the visual dimension of a product too much (Wood 2000). Despite some criticism around the American Marketing Association' definition, other scholars still maintain the substantial points in this approach by modifying it (e.g. Aaker 1991; Doyle 1994; Kotler *et al.* 1996; Stanton *et al.* 1991; Watkins 1986). Adopting the AMA's perspective, Dibb *et al.* (1997), for example, defined brand as follows:

“A brand is a name, term, design, symbol or any other feature that identifies one seller's goods or services as distinct from those of other sellers”

The critical difference between AMA's and Dibb *et al.*'s definitions is that the latter includes the concept of "any other feature" which reflects an important view that intangible elements in brands such as image can also differentiate products (Wood 2000). The primary insight into this approach to brand is that Dibb *et al.*'s (1997) definition focuses on differentiation which is the fundamental purpose of brand. It is a very important consideration that brand functions in the market where differentiation operates as a key driver in order to gain advantages over competitors. Although a firm enjoys huge sales revenues, dominant market shares and considerable profits by operating it in the monopolistic market, it must determine appropriate positioning of brand over potential competitors, considering competition in the future. Another point in Dibb *et al.*'s (1997) definition is that this view approaches brand from a firm's perspective rather than the consumer benefits perspective.

Unlike Dibb *et al.* (1997), Ambler (1992), addressing brand from consumer-oriented perspective, defined it as follows:

"the promise of the bundles of attributes that someone buys and provide satisfaction ... the attributes that make up a brand may be real or illusory, rational or emotional, tangible or invisible"

The attributes in this definition are formed from all elements of the marketing mix and entire product lines of a brand (Wood 2000). The attributes of a brand are



created from exploitation of marketing mix, helping consumers understand a product.

Additional definitions or descriptions of brand highlight either the ways that emphasize the differentiation from competitors' brands or a scheme to stress consumer benefits obtained through purchasing a brand. These definitions or descriptions of brand often emphasize brands as an image (Boulding 1956; Keller 1993; Martineau 1959) or as a brand personality (Aaker 1996; Alt and Griggs 1988; Goodyear 1993) that is formulated in a consumer's mind, while they also pay attention to understanding brand as a value system (Sheth *et al.* 1991) or as added-value (De Chernatony and McDonald 1992; Doyle 1994; Levitt 1962; Murphy 1992; Wolfe 1993). By incorporating previous studies' views, Brown (1992) provided a comprehensive definition of brand as follows:

“... nothing more or less than the sum of all the mental connections people have around it”

The definition proposed by Brown (1992) does not explicitly propose the difference between his definition and “bundles of attributes” suggested by Amber (1992). However, Brown's (1992) approach does not only provide a new perspective for brand, but also makes a considerable contribution to understanding the characteristics of brand. By discussing brand in terms of both the subsets and characteristics of it, it can be defined from various perspectives. However, describing brand characteristics is very important, since the descriptions of brand characteristics can play an important role in strategic decision-making. In line

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with this approach, Aaker (1996) suggested as below, in order to stress the strategic importance in understanding brand personality.

“... It can help brand strategists by enriching their understanding of people’s perceptions of and attitudes toward the brand, contributing to a differentiating brand identity, guiding the communication effort and creating brand equity”

Style and Ambler (1995) provide two philosophical approaches to defining brand. The first, a product-plus approach, views brand as an additional element to a product. In other words, this approach argues that brand must be understood as an identifier. According to this view, since brand is additional or supplementary to a product, branding becomes the last step in a new product development process (Style and Ambler 1995). The second, holistic approach focuses on brand itself (Style and Ambler 1995). Brand can be tailored by using the marketing mix, depending on needs or wants in particular target groups. Just as an individual marketing mix element is managed to support the brand message, marketing mix elements are unified by a brand. In a holistic perspective, marketing mix is unified to increase brand values, thus this approach is considered as an important perspective for creating high brand equity. Existing definitions of brand can belong to either one of two approaches proposed by Style and Ambler (1995).

De Chernatony and McDonald (1992) argued that the difference between brand and commodity can be summarized as added value. They suggested that brand is additional to a product, and both brand and added value are intrinsically a synonym. De Chernatony and McDonald’s definition seems to belong to the

product-plus approach suggested by Style and Ambler (1995). It is, however, needed to understand that the added value in marketing implies more comprehensive concepts. Wood (2000) suggested that added value cannot be quantifiable; thus, it must be understood in terms of consumer benefits. In addition, Kinnear and Bernhardt (1986), using the marketing perspective, proposed the following:

“... many companies make their product more convenient to use, thus adding value for the consumer”

Although it is possible to quantify the added value of a brand through products which were sold to end-consumers in the market, the added values in marketing are relatively very difficult to quantify because the products which are not sold yet possess a potential added value that can be sold through marketing activities (Ecroyd and Lyons 1979). Although added values can be attributed mainly to characteristics of products or services, they also can be created even in less tangible dimensions such as brand image. Therefore, the added values can be higher when the perspective shifts from tangible characteristics of a product or service to intangible elements of it (Wood 2000). By employing this approach, de Chernatony and McDonald's (1992) argument that a brand and added value are identical should not be interpreted as just the product-plus approach, but be interpreted as intangible elements as well as tangible ones in a brand.

To sum up, the existing literature regarding the brand definition has focused on one of two perspectives: either the role of brand for sellers or the role of brand for

consumers. However, both of the perspectives emphasize the common benefits of sellers or consumers. Emphasizing the benefits of sellers and consumers, Wood (2000) defined brand as follows:

“A brand is a mechanism for achieving competitive advantage for firms, through differentiation (purpose). The attributes that differentiate a brand provide the customer with satisfaction and benefits for which they are willing to pay (mechanism)”

Wood (2000) suggests that the competitive advantages of a company can be sales, revenue, profits, added values or market share, while benefits a consumer obtains by purchasing a product or a service can be real or illusory, rational or emotional, tangible or intangible benefits.

## **2.2 Brand Equity**

### **2.2.1 The Definition of Brand Equity**

It is since the late 1980's that the term 'brand equity' has been used beyond the term 'brand' (Aaker 1992; Keller 1993). Before the term 'brand equity' was used, brand was considered as just a unit providing attributes and benefits of a product, the value in brand itself was not considered as an important thing. However, perspectives about brand have been changed and recently, brand has been recognized as a value of asset. It is considered as not only a tool for representing a differentiated value but also as one of the corporate assets having sellable and

buyable values. For example, when Chrysler in the USA launched the cars which were produced through the same assembly line in the market with different names of Eagle Talon, Chrysler Laser, and Mitsubishi Eclipse, there was a big difference in the volume of sales according to the brands. This shows that the consumers' responses may vary with the brand in the market even though the products have the same physical appearance and quality.

The important definitions of brand equity are as follows. First, Marketing Science Institute defined brand equity as "... the value that is added by the name and rewarded in the market with better profit margins or market shares. It can be viewed by consumers and channel members as both a financial asset and as a set of favourable associations and behaviours" (MSI 1989, cited in Faircloth et al. 2001, p.62). According to this definition, brand equity means profitable potential power of the brand, and it is caused by the consumer's knowledge or perception of the brand (Chaudhuri 2002).

Aaker (1992), a leading researcher in brand equity theory, defined brand equity as "brand assets added to a product or a service which are related to brand names and symbols" and noted that it represents the consumer's willingness to pay a premium price. He pointed this out in relation to brand management focused on brand image. However, it was difficult to approach brand management as a long-term and strategic perspective with the traditional models, because this approach treated brand as only one part of advertisement and promotion and focused on short-term business performance. In addition, he emphasized the brand equity concept as a new brand management model and argued that the brand equity

should be considered as the assets assuring competitive advantages and long-term profits in a strategic perspective (Aaker 2000).

Keller (1993) suggested the ‘consumer-based brand equity’ concept and defined brand equity as “the differential effect of brand knowledge on consumer response to the marketing of the brand that brand knowledge has on consumer response to marketing activities for the brand”. In other words, brand equity involves consumers’ reactions to an element of the marketing mix for the brand in comparison with their reactions to the same marketing mix element attributed to a fictitiously named or version of the product or service.

Biel (1993) defined brand equity in terms of “the additional cash flow achieved by associating a brand with the underlying product or service” and pointed out that the term of brand equity is frequently confused with brand image. Brand equity deals with the value of a brand beyond the physical assets associated with its manufacture or provision, while brand image is a concept originated and owned by marketers and advertising specialists, the idea of a brand having an equity that exceeds its conventional asset value is a notion that was developed by financial people (Biel 1993). Simon and Sullivan (1993) defined brand equity in the financial perspective as “the incremented cash flow which accrue to branded products over and over the cash flows which would result from the sale of unbranded products”. They pointed out that the incremental cash flows are based on the value consumers place on branded products and on cost savings brand equity generates through competitive advantage. In addition, Kamakura and Russell (1993) defined brand equity as “the performance from a long-term

investment planned for establishing differential benefits or advantages in comparison with competitors”. In addition to these definitions, brand equity was also defined as “the favourable impression, attitudinal predisposition, or behavioural intention” (Rangaswamy et al. 1993), “the added value endowed by brand name” (Farquhar 1989), “incremented utility” (Kamakura and Russell 1993), “the difference between overall brand preference and multi-attribute brand preference based on objectively measured attribute levels” (Park and Srinivasan 1994), and “the enhancement in the perceived utility and desirability a brand name confers on a product” (Lassar et al. 1995).

Srivastava and Shocker (1991) suggested the two components of brand equity are brand strength and brand value. Brand strength is the concept based on consumers’ and distributors’ perception and behaviours that a brand can have differential competitive advantages, and brand value is the financial concept including the present position and future prospect for the brand. They argued that brand equity could be potential because brand value depends on the managerial ability to leverage brand strength through marketing strategies or tactics.

Lassar et al. (1995) argued that brand equity is created by consumers’ confidence for the brand compared to the competitive products and this confidence is expressed with consumer loyalty and consumer’s willingness to pay a premium price.



As previously stated, brand equity can be defined in a variety of ways. Feldwick (1996) simplifies the variety of these definitions by providing a classification of the different meanings of brand equity as:

- the total value of a brand as a separable asset – when it is sold, or included on a balance sheet;
- a measure of the strength of consumers’ attachment to a brand;
- a description of the associations and beliefs the consumer has about the brand.

The definitions of brand equity examined above are summarized in Table 2.1

Researcher or Institution	Definition of Brand Equity
MSI(Marketing Science Institute)	the value that is added by the name and rewarded in the market with better profit margins or market shares. It can be viewed by consumers and channel members as both a financial asset and as a set of favourable associations and behaviours
Farquhar (1989)	the added value endowed by brand name
Aaker (1991)	brand assets added to a product or a service which are related to brand names and symbols
Keller (1993)	the differential effect of brand knowledge on consumer response to the marketing of the brand that brand knowledge has on consumer response to marketing activities for the brand
Biel (1993)	the additional cash flow achieved by associating a brand with the underlying product or service
Lassar et al. (1995)	the enhancement in the perceived utility and desirability a brand name confers on a product
Park & Srinivasan (1994)	the difference between overall brand preference and multi-attribute brand preference based on objectively measured attribute levels
Simon & Sullivan(1993)	the incremented cash flow which accrue to branded products over and over the cash flows which would result from the sale of unbranded products
Kamakura & Russell(1993)	the performance from a long-term investment planned for establishing differential benefits or advantages in comparison with competitors.

Table 2.1 Definitions of Brand Equity

The definition of brand equity has been defined variously according to the researchers' points of view. However, despite the various definitions of brand equity, most researchers seem to implicitly agree that brand equity is basically 'the added value endowed by brand name' which was defined by Farquhar, 1989 (Aaker 1991; Kamakura and Russel 1993; Keller 1993; Simon and Sullivan 1993; Srivastava and Shocker 1991).

### **2.2.2 Two Perspectives for Approaching Brand Equity**

As previously stated, while brand equity reaches a rough consensus in terms of the conceptual level, there are two perspectives for approaching brand equity, and each perspective has big differences according to the differing points of view. There are two perspectives, which are the financial and marketing perspectives to approach brand equity.

#### **2.2.2.1 The Financial Perspective of Brand Equity**

The financial perspective focuses on measuring the monetary value of brand equity using the data such as stock price and financial statements and it is usually used to measure companies' value in the case of M&A between companies.

In one of the leading financial perspective studies, Simon and Sullivan (1993) defined brand equity as 'the increased cash flow' and separated it from the other asset values of a company by using the stock price information. They suggested

that the future prospect of the brand is reflected in the stock price. According to their research, the company's value in the stock market is calculated, and intangible asset parts of the company are derived by subtracting the substitute expenses of tangible assets such as factory, facility, inventories, cash etc. from the company's value. Finally intangible asset parts are classified into the brand equity value and other elements.

Mahajan (1994) argued that in spite of the fact that the brand equity makes up an important part in the value of an acquired company in M&A, the perceived value provided by brand is evaluated differently in each company, because many companies determine M&A with different resources. Thus, they suggested the brand equity evaluation method to consider this problem. Besides, Interbrand, a leading brand equity consulting company, measured the value of brand equity based on the factors of initiativeness, stability, marketability, internationality, trend, affordability and legal protection. This measured value provides the financial information for brand equity. In the other different financial perspective, the calculating method where the expenses that the new brand reach the level of brand equity of the established brand is also used. These financial perspective brand equity measurements can be used as important data in the event of company's goal accomplishment and M&A. This perspective, however, has brought out a problem in the calculating method based on stock market conditions. Furthermore, there is a limitation in brand management because of the fact that it is not able to give future directions and diagnose the problems of the company because brand equity is measured not by consumers' perspectives but the

company's perspective using the second data such as stocks, financial statements etc. (Ceurvorst 1994).

#### **2.2.2.2 The Marketing Perspective of Brand Equity**

The marketing perspective of brand equity is the approach with which brand equity is measured through the consumer survey. This approach is again classified into the 'cognitive perspective' where brand equity is measured by the consumers' perception and knowledge about a specific brand, and the 'behavioural perspective' that brand equity is measured by consumers' brand choice behaviours, which is one of the indices of market performance (Cobb-Walgren et al. 1995; Keller 2003; Yoo et al. 2001).

The cognitive perspective approach focuses on providing the directions for brand management. In order to suggest the guideline for brand management, brand knowledge or the value of the attitude based on consumer's perception for the brand such as awareness, association and perceived quality of consumer are the key factors to be measured. Thus, in this perspective, the work on identifying brand knowledge structure could be very important (Keller 2003).

In the behavioural perspective approach, brand equity is measured on the basis of the consumer's market performance such as brand loyalty and price premium (willingness to pay a premium for a brand) (Cobb-Walgren et al. 1995). This perspective is frequently used for measuring brand equity because it could be possible to calculate the utility value which is created in the market by brand.

From this point of view, Park and Srinivasan (1994) defined brand equity as individual perception and increased product preference provided by a brand. They suggested the calculation model for measuring brand equity using the multi-attribute model, which is related to consumer preferences. In addition, Kamakura and Russel (1993) suggested the model for measuring brand equity using the logit model, which is based on scanner panel data. Keller (1993), as the method of measuring the behavioural performance of brand equity, suggested (1) the brand-based comparative approach where brand equity is measured by changing only brand value under various marketing situations, (2) the marketing-based comparative approach where brand equity is measured by changing the other marketing factors fixing the brand value, and (3) the conjoint analysis where brand equity is measured by combining the above approaches.

This behavioural approach is widely used to ascertain the existence of brand equity. However, this approach has the limitation in how brand equity is established and in giving the directions on how it is managed. In other words, this approach can be useful in the respect of simply checking up the health conditions of a brand; however, it is not able to diagnose concretely which aspect of the brand is good or bad. It can only suggest that the brand conditions are good or bad like a thermometer. In line with this problem, many researchers agree that brand equity should be identified by measuring the consumer's perception in various ways than by simply measuring the behaviours, which is based on the theory that the consumer's perception or knowledge for the brand can be connected to consumer behaviour (Aaker 1992; Keller 2003; McDowell 1998). In this respect,

Biel (1992) pointed out that consumer behaviour depends on the perception for brand (Biel 1992).

To sum up, the perspectives of approaching brand equity can be divided into financial and marketing perspectives and the marketing perspective is subdivided into cognitive and behavioural approaches. Table 2.2 summarizes the perspectives of approaching brand equity.

Perspective		Level	Analysing Data	Focus	Related Studies
Financial Perspective		Company based	Statistical Data such as Stock Value and Market Share	Calculating the value of brand in company level	- Simon & Sullivan (1993) - Mahajan et al. (1994) - Interbrand
Marketing Perspective	Behavioural Approach	Consumers based	Consumers' behavioural data	Calculating brand utility (asset) in market	- Park & Srinivasan (1994) - Cobb – Walgren et al. (1995)
	Cognitive Approach		Consumers' cognitive data	Finding and measuring the components of brand equity	- Keller (1993) - Yoo et al. (2001) - Lassar et al. (1995)

Table 2.2 The Perspective of Approaching Brand Equity

This research focuses on the perspective of customer-based brand equity concept. It is assumed that brand power depends on the behaviour of consumers which include consumers' cognition and behaviours, and brand equity is derived from those behaviours of consumers (Keller 2003). In the following section, the representative theories regarding the consumer-based brand equity concept are examined.

## **2.2.3 The Theories of Brand Equity in Consumer-based Approach**

### **2.2.3.1 Aaker's Study**

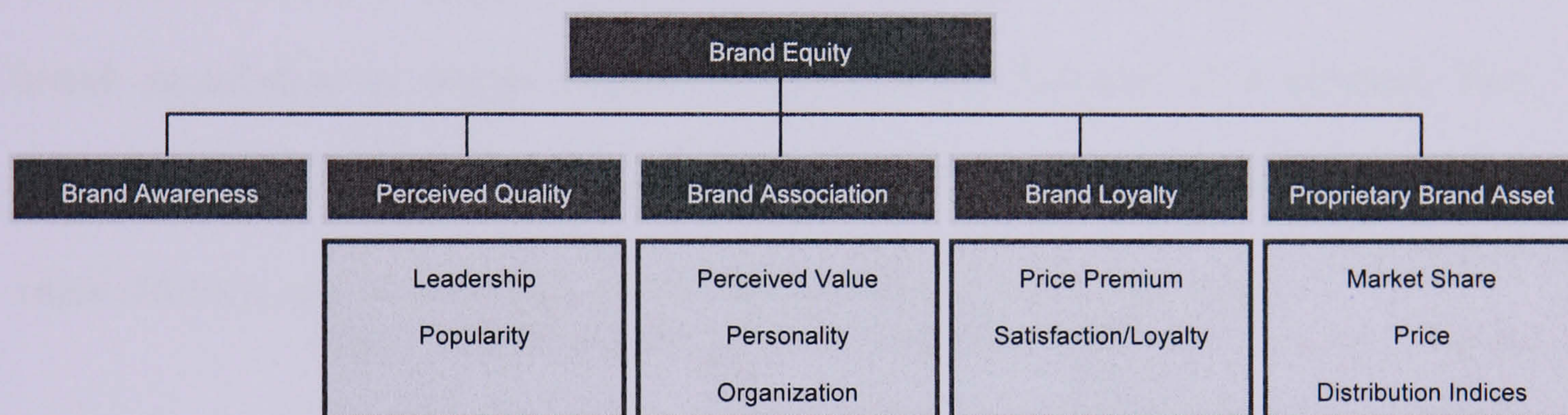
Aaker (1992) suggested brand loyalty, brand awareness, perceived quality, brand association and other proprietary assets as the components of brand equity. Brand loyalty which is the index of strong brand is related to not only customer satisfaction and repetitive purchase but also the profit flow (Aaker 1992). It is generally known that the costs for managing existing customers are smaller than the costs for getting new customers. In case of a brand with high brand loyalty, it is possible to make high returns with small expenses, and present loyal customers might be a result of considerable investment in the past. In addition, brand loyalty can play an important role on brand extension and has a relatively big influence on distribution as well as decreasing the competitor's influence by exerting strong power against the competitor's marketing activities (Aaker 1992). Brand awareness is the potential purchaser's ability that he or she can recognize and recall a brand in the specific product category (Aaker 1992). Recognition and recall have different meanings. Recognition means that information of a specific brand exists in consumer's memory and on the other hand, recall means the ability that a consumer can retrieve brand information in memory. Perceived quality which is related to company's confidence is an element that has the greatest influence on ROI (return on investment). It provides consumers with the rationale of purchase and can make the company secure the financial resources of investment for brand equity by enabling the fixing of a premium price. Brand association, which is the most noticeable part in Aaker's study of brand equity, is

composed of various ingredients such as product property, consumer benefits, usage and users, life style, product classes, competitors, countries and so on. Brand association affects consumers' information processes and it could be the foundation of product differentiation and brand extension. In addition, favourable brand association generates a positive feeling for the brand and provides the rationale for the purchase to consumers. The other proprietary brand assets such as patent and trademark are particularly valuable when a company wants to prevent the encroachment on their market share and brand loyalty by competitors. For example, when competitors try to make customers confused using similar brand names, symbols, and packages, trademark play an important role in preventing it and patent prevents the direct competition with competitors. Aaker (1996) also suggested the 'brand equity ten' as a measurement instrument which can evaluate and manage these five categories. Brand equity ten is the evaluation of items which measures the five categories of brand equity. It is composed of ten items: 'price premium', 'satisfaction and loyalty', 'perceived value', 'personality', 'organization', 'awareness', 'market share', and 'price and distribution indices'. In addition, Aaker pointed out perceived quality and leadership/popularity can be combined into the brand esteem dimension and 'perceived value', 'personality', and 'organization' can be combined into the 'differentiation' dimension. The relations between these evaluation items and the five categories are presented in Figure 2.1.

Aaker's study has been highly evaluated in the aspect that it provides a general guideline for brand management by not only categorizing the components of brand equity and subcategorizing its components, but also investigating the



relationship among components. However, the components of brand equity which were suggested in his study are so comprehensive that the concept has the problem that it is difficult to be practically applied. He suggested the components of brand equity and simply listed them, and the fact that the components were simply listed without explaining causal relationships among them could be a limitation. Besides, he emphasized the significant importance of association as a component of brand equity; however, the studies which are related to its measurement have rarely been conducted.



Source: Aaker, David A. (1992), "The Value of Brand Equity," *Journal of Business Strategy*, Vol.13, (Jul/Aug.), 27-32.

Figure 2.1 Aaker's Components of Brand Equity

### 2.2.3.2 Keller's Study

According to Keller (1993), brand equity is made up of the marketing effects uniquely attributable to the brand, and its basic source is consumer's brand knowledge. Brand knowledge is divided largely into two parts. One is 'brand awareness', which is composed of recognition and recall, and the other is 'brand image', which is a set of brand associations that consumers have in their memory.

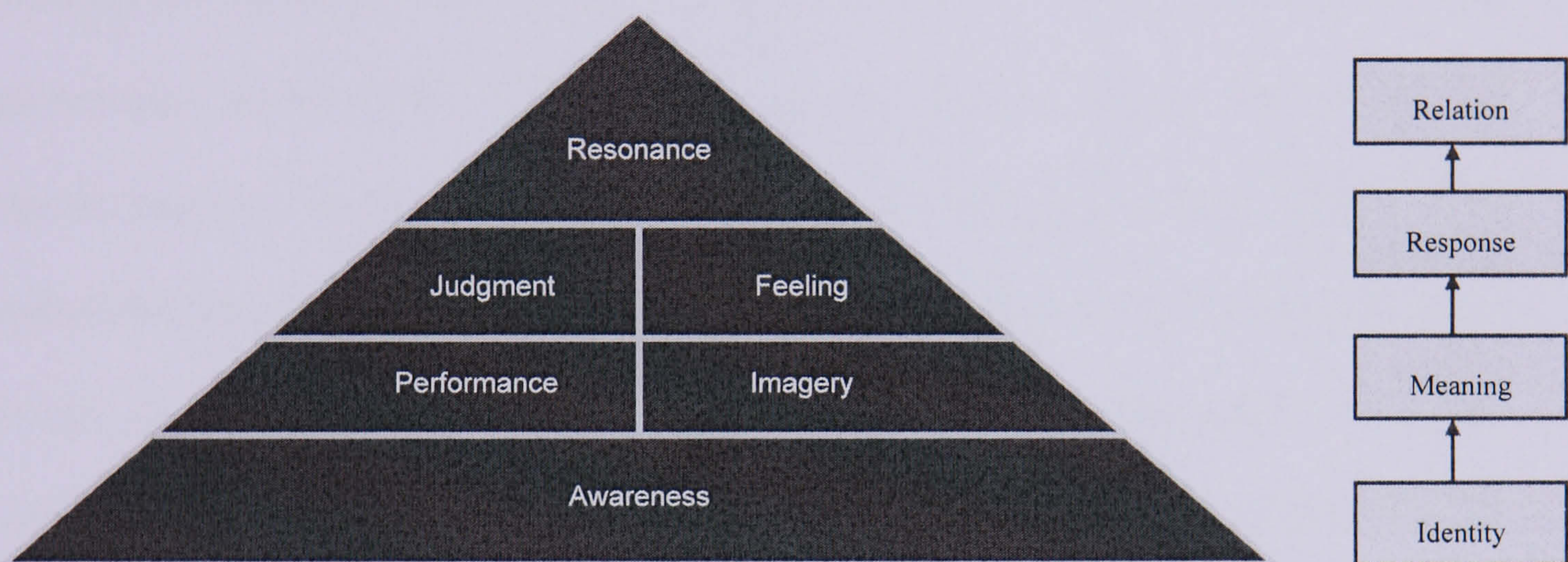
He evaluated brand equity with the following four stages on the basis of these concepts. The first stage is the brand identity stage where consumers perceive brand identity and this stage is measured by brand awareness which is the ability to recognize and recall brand.

The second stage is the brand meaning stage when the overall brand meaning is established in consumers' minds and this stage contains brand performance and brand imagery. Brand performance is consumers' brand associations or images in association with the functional aspects of a product. Brand imagery means the brand association or image related to the external features of a product. For instance, user's characteristics and attributes such as usage conditions, personality, value, history, and experiences of the brand are included in this stage.

The third stage is the brand responses stage when the brand identity and meanings draw the consumers' responses and this stage includes brand judgement and brand feeling. Brand judgement relates to consumer's opinions or evaluation about a brand such as the qualitative evaluation or reliability about a brand, the degree of brand consideration for purchase, and the degree of differentiated feeling about a brand. Brand feeling is the consumer's emotional responses to the brand such as levels of warmth, interest and sincerity.

The fourth stage is the brand resonance stage which shows how close the brand is with consumers, and resonance is again divided into loyalty, attachment, community, and engagement. Keller argued that this resonance stage is the final stage.

To sum up, Keller explained the brand equity concept with brand knowledge which is composed of brand awareness and brand image, and argued that in order to establish a strong brand, brand should finally reach the stage of brand resonance, passing orderly through brand awareness, brand performance, brand imagery, brand judgement and brand feeling.



Source: Keller, K. L. (2003), *Strategic Brand Management: Building, Measuring, and Managing Brand Equity*, 2<sup>nd</sup> ed. Upper Saddle River, Prentice Hall, NJ.

Figure 2.2 Four Stages of Brand Equity

Brand knowledge as the components of brand equity presented by Keller (1993) is more progressive than the components of brand equity presented by Aaker (1992) in terms of introducing the sequence of concepts (he did not simply list the components) and presenting the subordinate elements of brand equity components by classifying it. With this classification, it is possible to approach brand image in a quantitative way. This study has significant importance in which the quantitative measurement of brand image, which has long been regarded as a black box, is possible.

Keller's model defined brand equity in consumers' perspectives and has significance in the aspect that it has presented the hierarchy causal relationships among components and provided a conceptual framework for brand equity management.

Apart from these studies, Yoo et al. (2001) explained brand equity with four dimensions which are brand loyalty, brand awareness, perceived quality and brand association, using Aaker and Keller's research. They examined the validity of these construct scales using 1,530 people of American, Korean, and Korean American descent; however, they did not find the discriminant validity between brand awareness and brand association scales and they considered these two dimensions as one. With this result, they suggested that brand equity is composed of three dimensions. Moreover, Lassar et al. (1995) suggested that brand equity can be explained by using five dimensions of performance, social image, value, trustworthiness and attachment.

As previously examined, the common thing that the studies regarding consumer-based brand equity suggested is that brand image is the most important component of brand equity. In other words, a consumer's perception or belief which is associated with a brand could be an important factor for building up brand equity. Thus, in the following section, the theories which are related to brand image are discussed.

## 2.2.4 2. Brand Equity Measurement on a Practical Management Level

The discussions regarding brand equity component have been carried out in various ways.

### 1) Brand Asset Valuator

Young & Rubicam Consulting Company suggested a “brand asset valuator”, which can measure brand equity. According to the model, brand equity can be driven by two components which are customer perceived “brand stature” and customer perceived “brand strength”. They consider four antecedents of these two components, which are the level of differentiation of the brand, relevance of this differentiation to the consumer, the resulting esteem, and knowledge residing in the mind of the consumer, as the factors for determining brand value (see Figure 2.3).

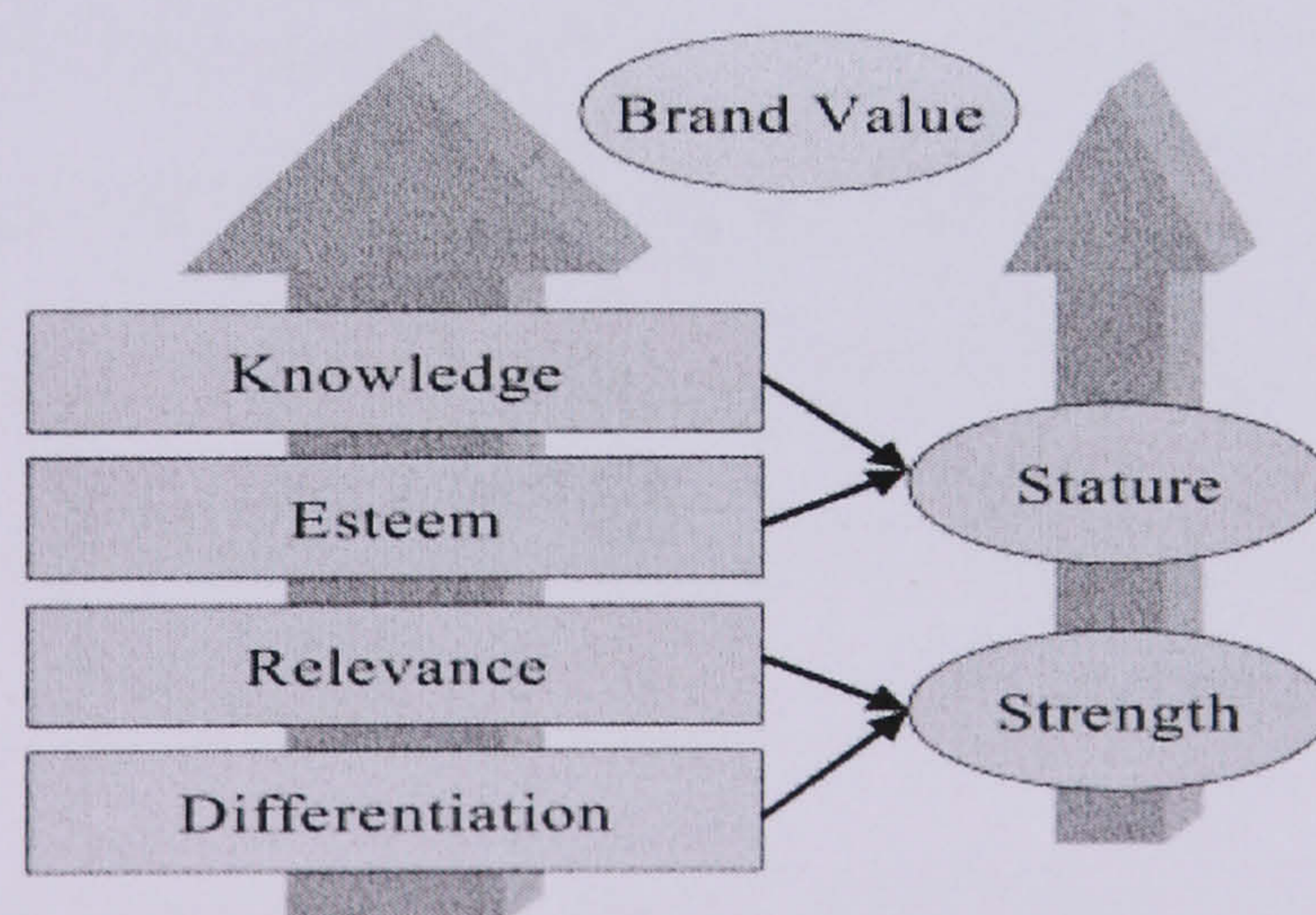


Figure 2.3. Brand Equity Measurement with the Brand Asset Valuator

Source: De Mortanges and Van Liel (2003), “Brand Equity and Shareholder Value,” *European Management Journal*, 21(4), p.522

Differentiation means the ability for a brand to be distinguished from its competitors or the perception of distinctiveness of the brand. Creating and maintaining relevance of the distinct brand to the customer will be the next step. Relevance measures the appreciation of a brand to a customer in terms of the marketing mix such as pricing, distribution, product design, and packaging (De Mortanges and Van Liel 2003). Relevance and differentiation together result in brand strength. Esteem is considered a third driver of brand equity. Esteem is defined as the extent to which consumers hold a brand which is relevant to them in high regard. Knowledge means that consumers are both explicitly aware of the brand and understand what the brand stands for. Thus, knowledge does not simply mean brand awareness, and is not a consequence of advertising and/or publicity alone (De Mortanges and Van Liel 2003).

## **2) EquiTrend**

EquiTrend was developed by Total Research consulting company and the measurement model includes three factors which are brand salience, quality, and satisfaction to measure brand equity. Brand salience means the percentage of consumers who have an opinion about a given brand. Quality is defined as the customer's judgment of the overall excellence, esteem, or superiority relative to alternative brands. In addition, satisfaction is measured by the average quality evaluation scores of consumers who use the brand frequently (Aaker 1996).

### 3) Brand Performa

Morar Consulting Company developed Brand Performa model to measure brand equity. According to the model, six factors, familiarity, relevance, differentiation, performance, empathy, and popularity, are used to measure brand equity (see Figure 2.4). Familiarity means the depth of understanding of the target market, and relevance is defined as the appropriateness of a brand to the target market. In addition, they defined differentiation as the distinctiveness of a brand in comparison to competitors and performance as the perceived effectiveness of a brand for delivering the stated benefit. Empathy is defined as the ability of a brand to connect with the target market and popularity means the perception of a brand's widespread use and acceptance.

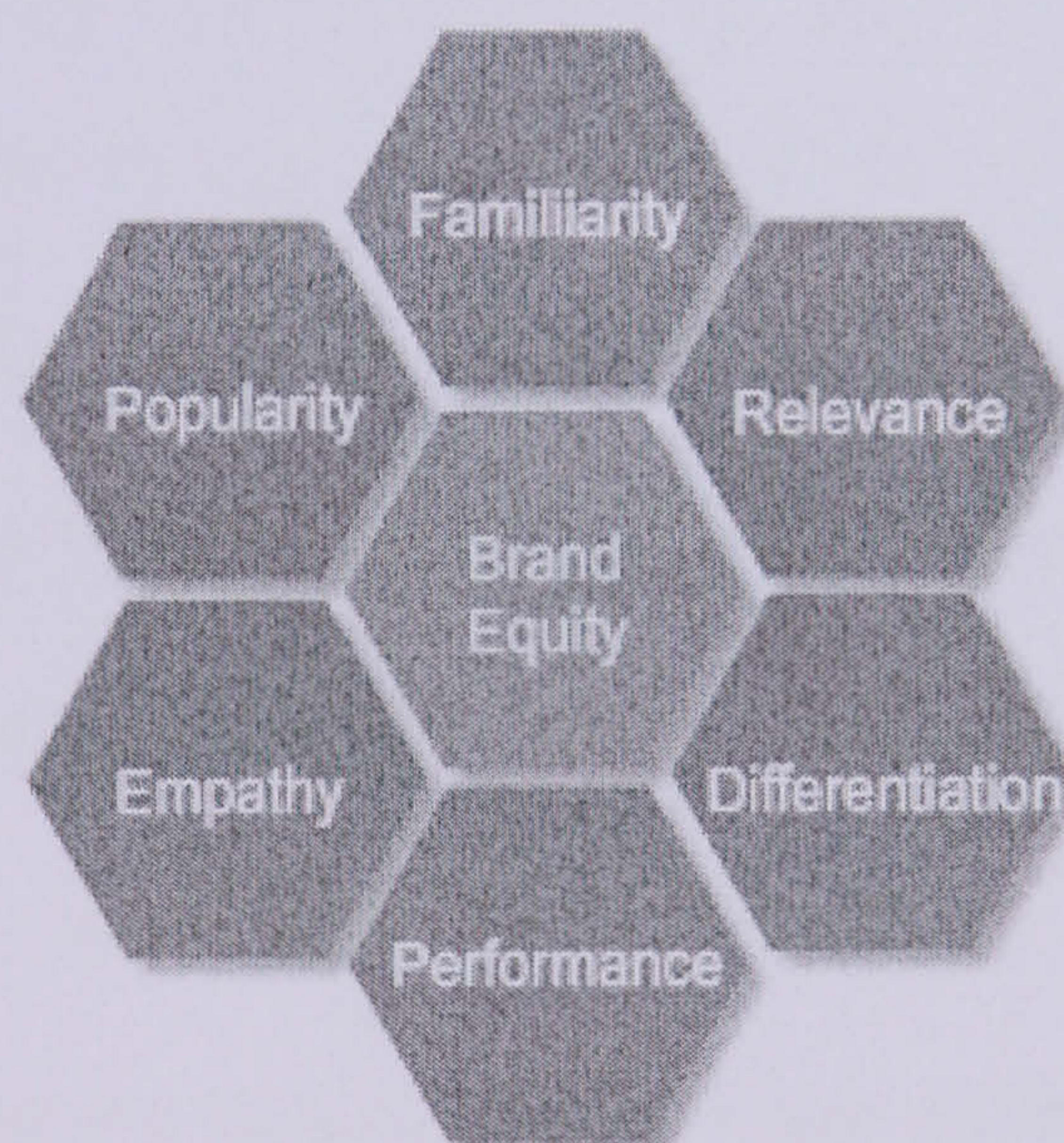


Figure 2.4 Brand Performa Model

Source: <http://www.morarconsulting.com>

As stated above, the components of brand equity are defined in a variety of ways according to researchers or companies. However, most brand equity measurement models were developed on the basis of the components of Aaker's brand equity

model which are brand awareness, perceived quality/ reputation, brand association/ distinctiveness, and brand loyalty.

## **2.3 Brand Image as a Key Factor for Brand Equity**

### **2.3.1 The Definition of Brand Image**

One of the main issues in relation to consumers' mental images in marketing area is brand image. Although brand image is an important concept in marketing, there has been no consensus as to the definition of brand image.

Gadner and Levy (1955) suggested that when they compare products that have no physical difference among products, consumers often have a strong preference with a specific brand due to the brand. According to Gadner and Levy's study (1955), it is because the brand has not only functional value but also non-functional value and they defined brand image as a functional and non-functional value of a brand. Ever since the concept of brand image was defined by them, a lot of researchers have made diverse definitions of brand image. Dobni and Zinkhan (1990) classified the various brand image definitions into five patterns; a blanket definition which is a simple but inclusive definition such as total impression or sum of total impression; emphasis on symbolism; emphasis on the meanings or messages; emphasis on personification and emphasis on cognitive or psychological elements such as feelings or attitudes.



**Blanket Definition:** The definitions in this category are so broad and it contributes little to a refined understanding of the brand image concept. However, it is important to understand the definitions of this category because they are rather effective expressions of the general sense of brand image as an abstraction (Dobni and Zinkhan 1990). For example, Newman (1957) defined brand image as “everything the people associate with the brand” and Herzog (1963) defined it as “the sum of the total impressions”. Snyder and DeBono (1985) suggested that “the images associated with the use of the product” and Dichter (1985) defined brand image as “the total impression an entity makes on the minds of others”. In addition, Runyon and Stewart (1987) defined brand image as “the product perception”. Table 2.3 summarizes the blanket definitions.

**Emphasis on Symbolism:** The definitions in this category use “symbols” in a variety of ways to define brand image. Levy (1958) defined a symbol as a “thing which stands for or expresses something else” and emphasized the relation between symbol and self concept. Pohlman and Mudd (1973) defined symbolic value (i.e., image) as “the extent to which a purchase enhances the worth of the person in his own eyes (self esteem) and in the eyes of others (status)”. In addition, Frazer (1983) uses symbols in a purely descriptive or associative manner stating that a product is a symbol. A more recent study (Noth 1988) has applied the concept of semiotics. From this perspective, objects of the marketplace are claimed to form semiotic systems and commodities are studied as signs whose meaning is the consumer’s brand image. Table 2.4 summarizes the brand image definitions which emphasize symbolism.

**Emphasis on Meanings and Messages:** The definitions in this category are focused on the underlying meaning that consumers have about a product to define brand image. However, the definition of meaning can be various among researchers. Sommers (1963) defined brand image in terms of “the meaning that a product has”. Grubb and Grathwohl (1967) defined the meaning (i.e., brand image) as “the psychic or symbolic value of goods purchased in the marketplace”. Levy and Glick (1973) defined brand image as the total idea about not only physical attributes and functions but also the meanings connected with the brands. In addition, Swartz (1983) defined brand image as product message and suggested that message differentiation could be used as a viable product differentiation strategy. Reynolds and Outman (1984) defined product imagery as the stored meanings that an individual has in memory. Durgee and Stuart (1987) suggested that each product or brand has a "meaning profile" and it refers to the complex meanings that are associated with the product or brand, or what the product means symbolically in the eyes of consumers. Table 2.5 summarizes the brand image definitions which emphasize meanings and messages.

**Emphasis on Personification:** The definitions in this category use human characteristics to define brand image. The personification of a brand and its image with human characteristics has been approached from two perspectives (Dobni and Zinkhan 1990). The first perspective focuses on describing the product as if it were a human being, suggesting that the brand has a distinct personality. The second perspective involves associating the consumer's personality or self concept with the image of brand concept in various ways. Researchers in this category simply suggested that products have personality images, or they focus on some

distinctly human descriptor, such as “age” image (Bettinger and Dawson 1979). In addition, Sirgy (1985) suggested that products are assumed to have personality image and Hendon and Williams (1985) used the terms of “brand personality and “brand character” and suggested that people favour products that match their own self interest. In addition, Debevec and Iyer (1986) suggested that in positioning and repositioning products, advertisers often work to create a gender image for a brand. Table 2.6 shows the brand image definitions which emphasize personification.

**Emphasis on Cognitive or Psychological Elements:** The definitions in this category focus on consumers cognitive or psychological elements such as “ideas”, “feelings”, “attitudes”, “mental constructs”, “understandings” or “expectations” to define brand image. Gardner and Levy (1955) defined brand image in terms of a consumer's feelings, attitudes and ideas towards a brand” and this definition has influenced subsequent definitions. Martineau (1957) defined brand image in terms of the total set of attitudes, the halo of psychological meanings, and the association of feeling. Reynolds (1965) defined brand image as the mental construct developed by the consumer on the basis of few selected impressions among the flood of total impressions and Bird et al. (1970) suggested that brand image is an attitude about a given brand. In addition, Gensch (1978) suggested that the term “image” is defined as an abstract concept incorporating the influences of past promotion, reputation and peer evaluation of the alternative. In addition, Levy (1978) suggested that brand image is the sum of consumers’ knowledge of a brand and their attitudes toward it. Bullmore (1984) defined brand image in terms of what people think and feel about it and Friedmann and Park et

al. (1986) defined it as a perception created by the marketer's management of a brand. Furthermore, Lessig (1987) suggested brand image is the psychological meaning and it refers to the consumer's understanding and evaluation of the brand. Table 2.7 summarizes the brand image definitions which emphasize cognitive or psychological elements.

Researchers	Definitions
Newman (1957)	(a) A product is a symbol by virtue of its form, size, colour and functions. Its significance as a symbol varies according to how much it is associated with individual needs and social interaction. A product, then, is the sum of the meanings it communicates, often unconsciously, to others when they look at it or use it. (b) A brand can be viewed as a composite image of everything people associate with it. These impressions determine how a prospective buyer feels about it and influence his selection. Brand image may have several dimensions: functional, economic, social, psychological...The limits are set by the brand image built through styling and advertisements as well as other product attributes.
Herzog (1963)	Brand image is the sum total of impressions the consumer receives from many sources...All these impressions amount to a sort of brand personality which is similar for the consuming public at large, although different consumer groups may have different attitudes toward it.
Snyder & DeBono (1985)	Practitioners of the soft sell approach typically create ads that appeal to the images associated with the use of the product, images that one may gain and project by using the product. ...Typically the copy associated with these ads emphasizes the image of the product or, more specifically, the images associated with the use of the product.
Dichter (1985)	(a) The concept of image can be applied to a product ... It describes not individual traits or qualities, but the total impression an entity makes on the minds of others. (b) An image is not anchored in just objective data and details. It is the configuration of the whole field of the object, the advertising, and more important, the customer's disposition and the attitudinal screen through which he observes.
Runyon and Stewart (1987)	A particular product position is also referred to as a product or brand concept if the product does not yet exist, or a brand image if the product does exist. ...A product's positioning in the market is simply the way consumers perceive that product. It reflects the language that consumers use to talk about it, their emotional responses to it, and all of the numerous factors that influence the perceptual process. The actual positioning of a product is the outcome of a complex set of factors, which are only partially understood.

Source: Dobni, Dawn and George M. Zinkhan (1990), "In Search of Brand Image," *Advanced in Consumer Research*, Vol 17, p.112

Table 2.3 Brand Image Definition 1 (The Blanket Definitions)

Researchers	Definitions
Levy (1958)	<p>(a) People buy things not only for what they can do, but also for what they mean... The things people buy are seen to have personal and social meanings in addition to their functions.</p> <p>(b) To ignore or decry the symbolism of consumer goods does not affect the importance of the fact. It will suffice to say that in casual usage symbol is a general term for all instances where experience is mediated rather than direct; where an object, action, word, picture or complex behaviour is understood to mean not only itself but also some other ideas or feelings.</p> <p>(c) A symbol is appropriate (and the product will be used and enjoyed) when it joins with meshes with, adds to or reinforces the way the consumer thinks about himself.</p>
Pohlman and Mudd (1973)	<p>The purchased item is conceptualized as having two kinds of value for the owner, one for its concrete functional utility and the other for its utility as a prestige symbol. ...functional value is that which is conventionally meant by utility as a good, while symbolic value (I.E., image) is the extent to which a purchase enhances the worth of the person in his own eyes (self esteem) and in the eyes of others (status).</p>
Frazer (1983)	<p>...the advertiser formulates a claim of superiority or distinction based on factors extrinsic to the product. Often products are associated with symbols, either socially extant or created by or for the advertiser. ...the effort to differentiate the product is psychologically rather than physically based.</p>
Noth (1988)	<p>From this perspective (i.e. semiotics) commodities are studied as signs whose meaning is the consumer's 'brand image'. Semantic components of a brand image...include technical matters, product characteristics, financial value or social suitability. Semiotically, such components constitute the signified (or content) of the product, while the material object is the signifier of the commodity as a sign.</p>

Source: Dobni, Dawn and George M. Zinkhan (1990), "In Search of Brand Image," *Advanced in Consumer Research*, Vol 17, p.112

Table 2.4 Brand Image Definition 2 (Emphasis on symbolism)

Researchers	Definitions
Sommers (1963)	the meaning that a product has perceived product symbolism
Grubb and Grathwohl (1967)	the psychic or symbolic value of goods purchased in the Marketplace
Levy and Gilck (1973)	<p>(a) The concept of brand image aptly sums up the idea that consumers buy brands not only for their physical attributes and functions, but also because of the meanings connected with the brands.</p> <p>(b) ...imagery is a mixture of notions and deceptions, based on many things. ...At times, imagery is indeed largely an illusion.</p> <p>(c) An image is an interpretation, a set of inferences and reactions to a symbol because it is not the object itself, but refers to it and for it.</p>
Swartz (1983) (Product Message)	In symbolic consumer behaviour, interest lies in investigating the role of products as “messages” or “nonverbal communication” transmitted by the user/owner. Attention needs to be given to differentiating the message the product sends as a marketing strategy.
Reynolds and Gutman (1984)	<p>(a) ...the set of meanings and associations that serve to differentiate a product or service from its competition.</p> <p>(b) The real key to understanding image lies in understanding linkages or connections between the levels that define that perceptual lens through which the consumer views the world and subsequently develops preferences for products. Effective linkages can be established for products only when we can gain a perspective on how the product relates to the personal value systems of consumers. By viewing means-end chains as entities, we can achieve this perspective.</p>
Durgee and Stuart (1987) (Product Meanings)	<p>(a) what the brand connotes or means symbolically in the eyes of consumers.</p> <p>(b) ...meaning profile refers to the complex of meanings that are associated with a given product category.</p>

Source: Dobni, Dawn and George M. Zinkhan (1990), “In Search of Brand Image,” *Advanced in Consumer Research*, Vol 17, p.112

Table 2.5 Brand Image Definition 3 (Emphasis on meanings or messages)

Researchers	Definitions
Bettinger, Dawson and Wales (1979)	...an “adult” image and a “child” image of the product
Sirgy (1985)	Products are assumed to have personality image, just as people do... These personality images are not determined by the physical characteristics of the product (e.g. tangible products, suppliers, and services) alone, but by a host of other factors such as advertising, price, stereotype of the generalized users, and other marketing and psychological associations.
Hendon and Williams (1985)	Also known as “brand personality” or “brand character”, it involves nothing more than describing a product as if it were a human being. This is an effective way of generating interest because people favour products that match their own self interest.
Debevec and Iyer (1986)	In positioning and repositioning products, advertisers often work to create a gender image for a brand...

Source: Dobni, Dawn and George M. Zinkhan (1990), “In Search of Brand Image,” *Advanced in Consumer Research*, Vol 17, p.112

Table 2.6 Brand Image Definition 4 (Emphasis on personification)

The recent studies regarding brand image are focusing on consumers’ association of a brand and brand image is usually considered as the combined effect of brand associations (e.g., Biel 1992), or more specifically as the consumer’s perceptions of a brand’s tangible and intangible associations (Engel, Blackwell, and Miniard 1993). In line with this definition, according to the associative network model, it is generally agreed that brand image is the informational node connected to the brand node in the brand association memory and reflects consumers’ thought.

Researchers	Definitions
Gardner and Levy (1955)	(a) The sets of ideas, feelings and attitudes that consumers have about brands. (b) The social and psychological nature of products. (c) ...a character or personality that may be more important for the overall status (and sales) of the brand than many technical facts about the product.
Martineau (1957)	...the product or brand image is a symbol of the buyer's personality ...The total set of attitudes, the halo of psychological meanings, the association of feeling, the indelibly written aesthetic messages over and above the bare physical qualities.
Reynolds, W.H. (1965)	(a) An image...is the mental construct developed by the consumer on the basis of few selected impressions among the flood of total impressions; it comes into being through a creative process in which these selected impressions are elaborated, embellished and ordered. (b) Images are not isolated empirical beliefs about a product or brand but are systems of inferences which may have only a tenuous and indirect relationship to fact. (c) Images are ordered wholes built by consumers from scraps of significant detail in much the same way that writers use significant detail to illumine complex totalities.
Bird, Channon and Ehrenberg (1970)	...(brand image is) an attitude about a given brand
Gensch (1978)	...brand preference is a function of the perception space associated with the alternatives. The author takes the position that perception consists of two components, the individual's ability to obtain measures of the brand attributes on factors he considers important, and the "image" of each brand. The term "image" as usually defined and discussed in the marketing literature is an abstract concept incorporating the influences of past promotion, reputation and peer evaluation of the alternative. Image connotes expectations of a consumer. The interaction of these two variables, individual attribute measurements and image, is assumed to vary across product types and across individuals. ...in marketing theory, image generally is assumed to have a more significant role in product situations in which the individual has difficulty obtaining objective measures on the important product attributes...
Levy (1978)	A brand image is a constellation of pictures and ideas in people's minds that sum up their knowledge of the brand and their main attitudes towards it.
Bullmore (1984)	A brand's image is what people think and feel about it: and those thoughts and feelings will not – cannot – be universally identical ...The image lies in the mind of the beholder – and is conditioned at least as much by the nature of the beholder as by the nature of the object itself.
Park, Jaworski and MacInnis (1986)	(a) A brand image is not simply a perceptual phenomenon affected by the firm's communication activities alone. It is the understanding consumers derive from the total set of brand related activities engaged in by the firm. (b) The image is a perception created by the marketer's management of the brand. Any product theoretically can be positioned with a functional, symbolic or experiential image.
Friedmann and Lessig (1987) (Psychological Meaning)	...the consumer's understanding and evaluation of the product.

Source: Dobni, Dawn and George M. Zinkhan (1990), "In Search of Brand Image," *Advanced in Consumer Research*, Vol 17, p.112

Table 2.7 Brand Image Definition 5 (Emphasis on cognitive or psychological elements)



In addition, Yoo et al. (2000) suggested brand association is complicated and connected to one another, and consists of multiple ideas, episodes, instances, and facts that establish a solid network of brand knowledge. It is formed as a result of the consumer's brand belief, which can be created by the marketer, formed by the consumer himself through direct experience with the product, and/or formed by the consumer through inferences based on existing associations (Aaker 1991). In the context of products such as electrical appliances, brand associations would represent the functional and experiential attributes offered by the specific brand. The intangible qualities that consumers associate the brand with, such as innovativeness, distinctiveness, dynamism and prestige are also considered as brand associations.

To sum up, most recent research regarding brand image is focused on what associations consumers come up with in relation to a specific brand and the measurement of individual brand-related associations. According to several definitions as previously stated, brand image can be defined in terms of an overall meaning including product attributes and consumer's subjective association or emotion about a brand.

### **2.3.2 The Types of Brand Image**

The studies regarding the elements which can create brand image have a variety of perspectives because brand image is defined in various perspectives. Some researchers have suggested diverse elements of brand image as summarized in Table 2.8. As shown in Table 2.8, the element creating a brand image is

diversified. Nevertheless, it is important that a specific element does not create brand image. It cannot be said that a specific element is very important, or another specific element is less important. Brand image is formed by the overall combination of these elements in a consumer's mind. Similarly, Yoo et al. (2000) suggested that brand image is formed by various ideas, episodes, instances, and facts that make the brand knowledge network.

One of the key pieces of research which is related to elements and types of brand image is Keller's study. As shown in Figure 3.3, Keller (1993) tried to approach brand equity from the consumer-based perspective and classified the consumer's brand knowledge system into brand awareness and brand image. Again, brand awareness is divided into brand recall and recognition, and the brand image is regarded as a set of associations related to brand in a consumer's memory.

Keller (1993) suggested that brand image can be divided into three types of brand association which are attributes, benefits, and attitudes-related association. Firstly, attributes are those descriptive features that characterize a product or service (Keller 1993) and attribute-related association is divided into product-related attributes and non-product related attributes association. Secondly, benefits are the personal value consumers attach to the product or service attributes – that is, what consumers think the product or service can do for them (Keller 1993).

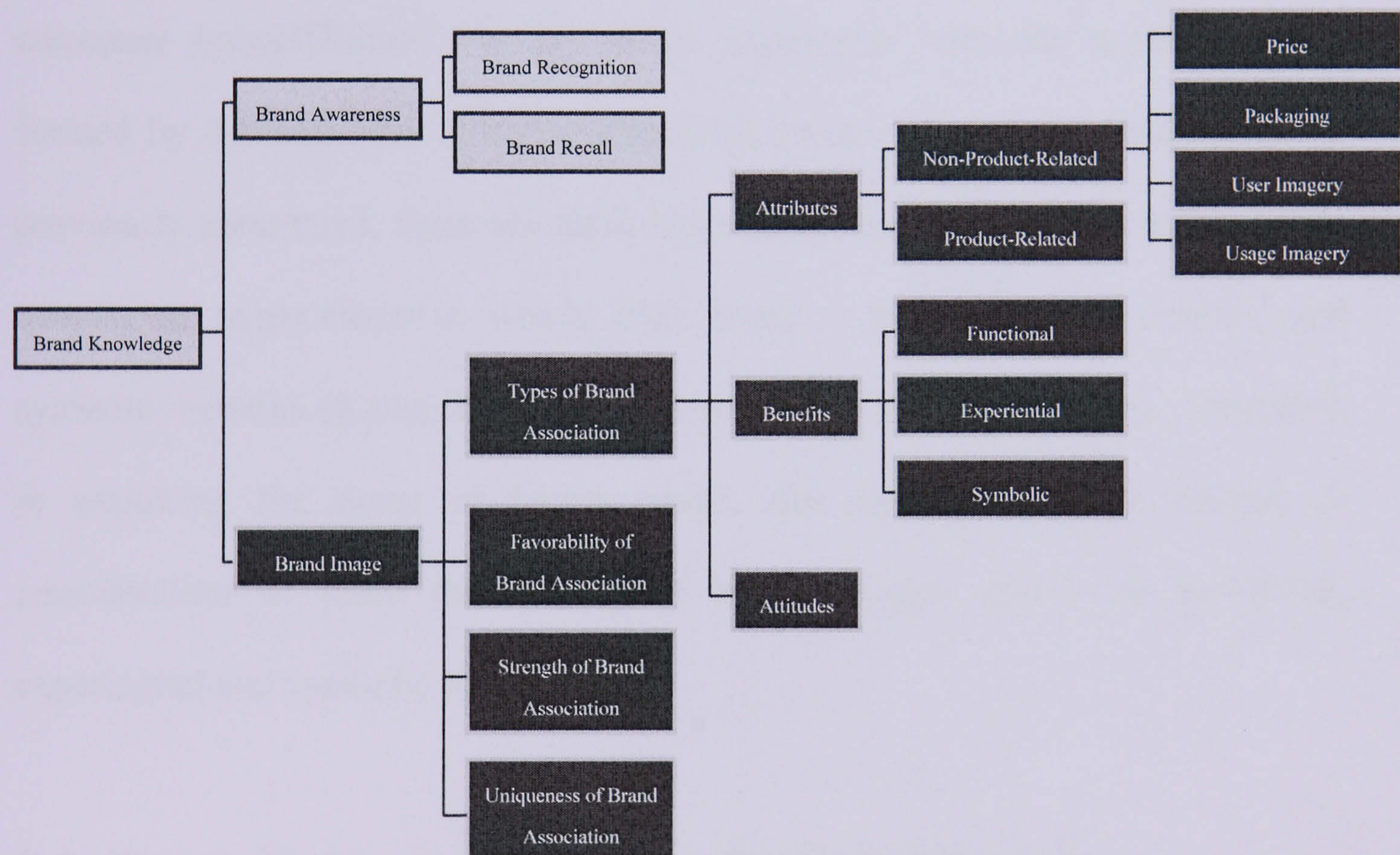
Researchers	Elements
Kirkpatrick (1964)	design, color, package, prices, advertising, types of consumers purchasing the product, types of stores and manufacturers
Rodger (1965)	feeling about a product's physical elements or shape, feeling about a product's intrinsic quality, status of product users, intended environment for the use of a product, ideal conception of self-display according to usage of products
Boyed and Newman (1975)	advertising, prices, product, packaging, TV program, the length of period for sale
Troxwell and Judelle (1981)	silhouette, decoration, interest in the surface, colour, technology, size, sensory elements (smell, sound), expenses and serviceability in handling, practicality, sense of intimacy with a brand, reliability, suitability, prices
Aaker (1992)	product attributes, intangibility, customer convenience, relative prices, user, customer celebrity, personality, a product category, competitor, use, 11 types of association in relation to the scope by country/district
Keller (1993)	attribute-related association (product-related & non-product-related attributes), benefit-related association (functional, experiential, and symbolic benefits), attitude-related association

Table 2.8 Elements of Brand Image

According to the underlying motivations that a consumer pursues, benefits are classified into three categories of functional, experiential, and symbolic benefits (Keller 1993). Functional benefits are more related to intrinsic advantages and generally correspond to product attributes (Keller 1993). These benefits often are connected to fairly basic motivations such as psychological and safety needs (Maslow 1970). Experiential benefits relate to what it feels like to use the product or service and also usually correspond to the product-related attributes. These

benefits satisfy experiential needs such as sensory pleasure, variety, and cognitive stimulation (Keller 1993). Symbolic benefits correspond more with extrinsic advantages of product or service consumption (Keller 1993). They usually relate to non-product related attributes and correspond to underlying needs for social approval or personal expression and outer-directed self-esteem (Keller 1993). In addition, Keller (1993) suggested that brand associations can vary according to their favourability, strength, and uniqueness.

Figure 2.5 summarises the Keller's brand knowledge model.



Source: Keller, K.L. (1993), "Conceptualizing Measuring and Managing Customer-Based Brand Equity," *Journal of Marketing*, Vol. 57, p.7

Figure 2.5 Brand Knowledge Model

The consumer's brand image is formed differently according to each consumer's pursuing benefits on the brand, and individually different images are formed

through the consumer's pursuing benefits. For example, in the context of products such as lap-top computers, brand image would represent the functional and experiential attributes offered by the specific brand such as easy to use, speed and portability. However, in the case of products such as jeans, consumers associate the brand with personal expression, differentiation with other people, and self-esteem and so on. Brand attitudes mean the consumer's overall evaluation of the brand and have an important meaning as this is the basis for selective action.

As Aaker (1991) suggested, brand image is created by the result of consumers' beliefs about a brand which can be created by the marketer, formed by the consumer himself/herself through direct experience with the product, and/or formed by the consumer through inferences based on existing associations. As previously mentioned, there are three basic categories of belief according to the underlying motivations to which they relate - functional, experiential, and symbolic benefits (Keller 2003; Park, Jaworski, and MacInnis 1986). Therefore, in exploring the types of brand image, this research will be limited to consideration of these three kinds of brand images which are functional, experiential and symbolic image.

## **2.4 Design Image as a Key Factor for Brand Equity**

### **2.4.1 The Importance of Product Design on Brand Equity**

In an affluent society, most products are in the mature stage of the product life cycle and it becomes quite hard to find rational consumers who consider product functions and price as the most important criteria in their purchasing decision in

the market. However, the number of emotional consumers is increasing and they consider sensual values such as design and colour as important factor for brand choice. Thus, product design is a powerful strategic tool for companies to obtain continuous competitive advantages. Most companies tend to overlook the fact that design could be used as a strategic tool due to the lack of the understanding of design; however, it is possible for a company to enhance the image of products, company's management condition, communication and corporate image with strategic design (Lynch and Weigold 1998). In line with this consideration, the advanced countries in design are now making the entry barrier and re-attacking the market with high-quality product design permeated with a corporate soul. The meaning of design which was nothing more than a shape in the past is considered as the most important management philosophy.

With this high concern of design, the importance of design is the important research topic that has recently attracted the attention of researchers. According to a survey with senior marketing managers, whilst 17% of respondents considered price as an important factor that can determine the performance of new products, 60% believed that design is the most important characteristic (Bruce and Whitehead 1988). Moreover, as a result of analyzing the performance of 203 new products, product design was found to be the most important factor in sales success (Cooper and Kleinschmidt 1987). Similarly, Kotler and Rath (1984) suggested that when consumers choose one of two products which have the same price and performance, they choose the product which has more attractive design. In addition, they emphasized that design can be a strategic tool for companies to gain competitive advantage and suggested that well-managed, high-quality design

provides the company several benefits. It can create not only corporate distinctiveness in the marketplace but also a personality for a newly launched product so that it stands out from its more prosaic competitors. It can be used to reinvigorate product interest for products in the mature stage of the product life cycle. It communicates value to the consumer, makes selection easier, informs and entertains. Design management can lead to heightened visual impact, great information efficiency and considerable consumer satisfaction.

Cooper and Kleinschmidt (1987) suggested that product design is the most important determinant of sales success, one of the important attributes that can influence the evaluation process is the design attribute. Some design attributes play an important role in the consumer's evaluation of a product's level of quality. For example, consumers could regard the slimness of an mp3 player as a technical development. They would evaluate an mp3 player that has a slim design as a good quality product. The slim design can be a favourable attribute in consumer quality evaluation by itself. In this case, consumers may pay more attention to a design attribute (slimness) than they would to the brand.

Moreover, Block (1995) suggested four reasons which can explain why product design is important. First, product design can gain the attention of the consumers. Second, product design creates consumers' initial impression regarding other product attributes. Thus, product design plays an important role in communicating information to consumers. Third, product design could make human beings enjoy aesthetics with sensible and beautiful product design. Thus, product design greatly influences the quality of our life. Lastly, though numerous products are easily

discarded, good design can prolong the period over which the consumer enjoys and wishes to own the product (sometimes referred to as ‘affective sustainability’).

As studies examined previously, investment in design is necessary for companies to overcome competition in the market.

Corporate image depends on product image and product image is largely affected by product design image. When consumers encounter product design, they can form beliefs, thoughts and impressions about the product, which can be knowledge of the product. This knowledge which is formed by the psychological process of product design could build up positive attitude or buying intention of consumers and furthermore derive consumers’ loyalty. Furthermore, when consumers evaluate product quality, they gain attribute information from various sources such as advertising, word of mouth, trial experience and so on, and they use those attributes in their evaluation process. Amongst the important attributes that can influence their evaluation process are the design attributes. Consumers increasingly make brand choice based on aesthetic value and distinctiveness of visual design (Dumaine 1991). Therefore, when consumers make purchase decisions based on a specific design, design attributes can play an important role in consumers’ evaluations of product and purchase processing. Consumers make predictions of the quality of a product by comparing and evaluating the design of the product. This means that the design attributes can influence the consumer’s ability to predict the nature of the benefits that would be derived from a product. To sum up, product design can play an important role to derive consumer behaviours which a company pursues from consumers. Thus, companies have to



focus on enhancement of product design image to build up brand image and brand equity due to the enormous effect of product design on product and corporate image.

In order to make favourable product or brand image, it is necessary to examine design image that consumers form when they encounter a product design. Furthermore, it can be a critical issue for building up brand equity. Therefore, the concept of design image is discussed in the following section.

#### **2.4.2 Definition of Design Image**

The lexical meaning of image, derived from the Latin language, is imago, meaning mental image, picture, symbol etc. In Longman dictionary, image means “ 1) a word, phrase, or picture that describes an idea in a poem, book, film etc., 2) a picture that you have in your mind.” It indicates the sensible picture of an object drawn in a human being’s heart and visible things mainly but contains ideas in the mind. A lot of research which is related to consumers’ mental images of an object has been conducted. However, in past research which is related to image, it is very difficult to make a unified definition of image because the concept of image has been defined in various points of view for different purposes or intentions by researchers.

According to Barteley (1710), image is represented in mind by a specific object and experiences with it and it is the result of the association of ideas from which it is notified through one’s own memory and sensorium. Boulding (1995) who

established the basis for the study of image classified image into 8 levels in the viewpoint of the organizational theory. He defined image in terms of mental pictures or imagery created by inference process based on incomplete information about a specific object or thing. He suggested that human beings create a new image through existing images and they behave based on the created image. Ahmed (1991) defined image as the mental concept which is created by a person based on the impression left in his/her mind and it is the totality of beliefs, ideas and impressions in a person's mind. He suggested that image is an evaluation criterion giving a meaning to a specific object and people express and remember the object through images. Lee (1997) defined image as the evaluation criteria created by interactions among beliefs, thoughts and recognitions of a person to a specific object and argued that it is very subjective and thus, it has differences for each person. Assael (1998) defined image in terms of the comprehensive perception of an object created by processing information about the object, and suggested image is the subjective feeling created based on the information left in memory out of all the mental pictures. Similarly, Faircloth, Capella, and Alford (2001) defined mental images as "the results of symbolic process" based on stored experiences in associative memory regarding objects and events. In addition, Aaker (1982) suggested that there are plenty of theories of image, however, the most general definition of it including characteristics of an object and human's psychological process which are emphasized in most past research of image is "a person's impressions which are formed by the one's knowledge and ideas about visual and invisual attributes of an object". According to definitions of past research, image could be generally defined as a totality of belief, thought and

impression of an individual to a specific object. The established definitions of image are summarized in Table 2.9.

Researchers	Definitions
Boulding (1995)	Mental pictures or imagery created by the inference process based on incomplete information about a specific object or thing. The human being's behaviour depends on image.
Myers (1982)	Criteria giving meaning to a specific thing and for evaluating a specific thing positively and negatively. People state and remember through image.
Assael (1998)	Comprehensive perception for an object created by processing information about the object
Tae-hee Lee (1997)	Evaluation criteria created by interactions among beliefs, thoughts and recognitions of a person to a specific object
Won-joo Choi (2002)	Ideas or imagery created by interactions among belief, thought and perception of each individual for a specific object
Ahmed (1991)	Totality of beliefs, ideas and impressions in a person's mind
Tucker (1991)	The result of associations of ideas from which is notified through one's own memory and sensorium.
Aaker (1982)	Person's impressions which are formed by one's knowledge and ideas about visual and invisual attributes of an object
Faircloth, Capella, and Alford (2001)	Results of symbolic process based on stored experiences in associative memory regarding objects and events.

Table 2.9 Definitions of Image

In past research on image mentioned above, there are two common things which have to be considered in defining image. Firstly, most research defined image in two dimensions: 1) the imagery of an object 2) beliefs, thought, and impression of an object. In cognitive psychology, knowledge is classified into two types, which are visual image (imagery) and semantic meaning, and image is considered as visual representation in mind about a specific object. In exploring the definition of image, this research is limited to consideration of semantic meaning which can be

expressed in the linguistic way to avoid the ambiguity of definition of image and increase the possibility of measuring it. Secondly, most research has considered image as the response, such as beliefs, impressions, and thoughts by the psychological process.

If image is defined as the result of a psychological process (e.g. associations of ideas), design image could be defined as psychological responses to a product design. As Aaker (1991) defined brand image as everything which is associated with brand in mind, design image can be defined in terms of everything which is associated with design in mind. In other words, design images of product design are the psychological responses such as beliefs, thoughts and impressions about the design

Therefore, based on the collective research which was reviewed above, design image is defined formally here as psychological responses such as beliefs and thoughts which can be expressed in the linguistic way about a product design. However, product design is the broad term that includes all engineering-related attributes such as ergonomics, production efficiency, strength, recyclability, and distribution ease, as well as aesthetics (Bloch 1995; Davis 1987). As many researchers suggested, a product's form represents a number of elements chosen and blended into a whole by the design team to achieve a particular sensory effect (Hollins and Pugh 1990; Lewalski 1988). Product design is the broad term that includes all engineering-related attributes such as ergonomics, production efficiency, strength, recyclability, distribution ease and aesthetics (Bloch 1995; Davis 1987). As many researchers suggested, a product's form represents a number of elements chosen and blended into a whole by the design team to

achieve a particular sensory effect (Hollins and Pugh 1990; Lewalski 1988). Therefore, there are a lot of factors which have to be considered when developing a successful product design. Given the purpose of the product, its target market, and its desired performance specifications, the design team has to try to create a product design that will be successful (Bloch 1995). Bloch (1995) suggested some criteria that design teams must consider for developing a successful design.

**Performance Objectives:** In many design projects, target performance is one of the most important criteria to be considered. The product design team must consider the level of performance desired by the target market and distributors (Bloch 1995). For a product to be successful, its sensory characteristics must induce positive emotions from target consumers. There are also functional performance goals that pertain to a number of variables such as service life, horsepower, shelf life, resistance to environmental stress, and maintainability (Hollins and Pugh 1990). In addition, the product design must address the environmental aspects of performance, including its ability to be recycled (Nussbaum 1990a).

**Ergonomics:** Ergonomics involves the matching of a product to the target user's capabilities to maximize safety, efficiency of use, and comfort (Osborne 1987). Ergonomic demands often directly influence product characteristics such as weight, texture, and shape (Bloch 1995). Attention to ergonomic properties has been increased because marketers are competing on "ease of use" (Nussbaum 1988, 1993).

**Production and Cost:** Production process and manufacturing costs must be considered for developing product design. Designers are usually instructed to develop what can be efficiently manufactured at a target cost (Dumaine 1991; Hollins and Pugh 1990). Designers must take into account materials and shapes that are consistent with manufacturing resources and cost targets to develop successful product design (Bloch 1995).

**Regulation and Legality:** Regulation and legality should be considered as the criteria for developing product design. These factors usually are not flexible and compromise does not occur (Bloch 1995). For example, packaged food makers must follow the Food and Drug Administration's (FDA) guideline.

**Marketing Programs:** When a design team develops product design, they must consider marketing programs. For example, product design might match with the distribution plan of a company. The ideal product design must be suited to the demands of storage, handling, and transportation (Bloch 1995). It must also match with the manner in which retailers will display and sell the product. In addition, the design team has to consider the need for new products in a given product line to maintain a family resemblance to the existing models (Bloch 1995). It means that the product design must make consumers evoke a particular meaning that supports a brand positioning, company reputation, or anticipated promotional themes (Bloch 1995).

With the consideration of these criteria, product design can be defined in a variety of ways. This research, however, focuses more on visual product characteristics

because the purpose of the research is to investigate consumers' thoughts and beliefs about the external shape when they are exposed to a product. Thus, using the definition of Bloch, Brunel, and Arnold (2003), the definition of product design in this paper is limited to visual product aesthetics or those characteristics that create a product's appearance, such as materials, proportion, colour, ornamentation, shape, size, and reflectivity. In conclusion, design image is defined here in terms of psychological responses such as beliefs and thoughts which have semantic meanings about product aesthetics or those characteristics that create a product's appearance, such as materials, proportion, colour, ornamentation, shape, size and reflectivity.

#### **2.4.3 The Types of Design Image (Psychological Responses to Product Design)**

When consumers are exposed to an external stimulus, they start to pay attention to that stimulus and elicit perception of it. The product design may elicit a variety of psychological responses from consumers. Bitner (1992) noted these psychological responses are classified into two types which are cognitive and affective responses. He argued that cognitive and affective responses interact and may occur simultaneously. In addition, Bloch (1995) suggested that consumers' psychological responses to product design can be explained with these two components - cognitive and affective - based on past research. In addition, some research on destination image suggested cognitive and affective image as the type of destination image (Baloglu and McCleary 1999; Sonmez and Sirakaya 2002). Therefore, types of design image are examined with two types of psychological responses - cognitive and affective.

### **2.4.3.1 Cognitive Responses**

Cognition is defined as the mental processes involved in gaining knowledge and comprehension, including thinking, knowing, remembering, judging and problem solving (Cohen 1990). When consumers are exposed to a product design, a variety of psychological responses can be elicited by the cognitive mental process. Pike and Ryan (2004) suggested that the cognitive image components consist of beliefs and knowledge about an object, primarily focusing on tangible physical attributes.

In addition, Bloch (1995) suggested two types of cognitive responses to product design which are product related beliefs and categorization. In his research, cognitive responses include both product-related beliefs and categorization. Firstly, product form could create beliefs pertaining to such characteristics as durability, dollar value, technical sophistication, ease of use, gender role appropriateness and prestige (Bloch 1995). To illustrate this, the compact design of a mobile phone may elicit perceptions of usefulness and convenience. Therefore, the form of a product creates and affects consumers' beliefs about the product (Bitner 1992; Solomon 1983).

Secondly, the concept of product categorization is another important type of cognitive response to product form (Loken and Ward 1990; Sujan 1985; Sujan and Dekleva 1987). According to categorization research, consumers try to understand a product by placing it within an existing category (Bloch 1995). Categorization can be shown to be based on the perceived similarity between a given product and some ideal representation of product categories and sub-



categories (Shackleton & Sugiyama 1998). For example, when a consumer encounters a new mobile phone, they may categorise it as a mobile phone because of its shared design characteristics with a prototypical construct representing its class of product, derived from experience of other exemplars in the class.

#### **2.4.3.2 Affective Responses**

The other psychological responses are affective responses. Affect refers to the experience of feeling or emotion (Cohen 1990). Zajonc (1980) suggested that this reaction to stimuli is primary for human beings, and that it is the dominant reaction for lower organisms. He suggested that affective reactions can occur without extensive perceptual and cognitive encoding, and can be made sooner and with greater confidence than cognitive judgments.

On the other hand, many researchers (e.g., Lazarus 1982) considered affect to be post-cognitive. In other words, affect is thought to be elicited only after a certain amount of cognitive processing of information has been accomplished. In this view, an affective reaction, such as liking, disliking, evaluation or the experience of pleasure or displeasure, is based on a prior cognitive process in which a variety of content discriminations are made and features are identified, examined for their value and weighed for their contributions (Brewin 1989).

Perception on the product design brings out a number of affective responses from the consumers. Bloch (1995) suggested that perception of product form can lead

to a simple positive or negative response such as liking and disliking, or they can evoke stronger aesthetic responses such as love and hate from consumers.

According to Reebok's John Zoccai, an outstanding design makes consumers fall in love with the product (Dumaine 1991). Holbrook and Zirlin (1985, p. 21) defined aesthetic response as "the deeply felt experience that is enjoyed purely for its own sake without regard for other more practical considerations." Bloch (1995) argued that affective responses derive from the design and sensory properties of the product rather than its performance or functional attributes and these affective responses may be in response to the overall form or may relate to individual design elements. To illustrate this, a prospective buyer may like the appearance of a new mobile phone except for the design of its buttons.

Aesthetic response is normally linked to positive responses and enjoyable experience. In particular, designers aim to induce positive reaction to their work. However, managers need to perceive the need to sometimes induce negative reaction. Take the example of a consumer who is choosing furniture. This consumer may mock a poor design of a particular sofa. In addition, there are instances in which cars and clothing have failed due to the negative reaction to the design. The purpose of the product design is to induce positive reaction, not negative reaction. These emotional reactions manifest in the form of reaction towards the product, or appear as reaction to the individual design element. For example, a potential owner may like the outside appearance of the car that is launched without aluminum wheels.

# CHAPTER 3 METHODOLOGY

Saunders, Lewis and Thornhill (2000) suggested the research process ‘onion’ model and in their model, the main research strategies of the research are experiments, case studies and survey research. The main research strategy of this research is survey research. In order to explain the reasons behind the choice of survey research as the main research strategy for this research, this chapter starts with a description of characteristics of survey research and then explains why survey research is appropriate for this study by comparing other research strategies.

## 3.1 The Main Research Strategies

The main research strategies are case studies, experiments and surveys (Saunders et al. 2000).

A case study is a research methodology to study a phenomenon in natural settings. Although the researchers are not able to control a phenomenon, they can manage research periods and scope (Pinsonneault and Kraemer 1991). Case studies can be employed in both cases in which a researcher explicitly defines independent and dependent variables or not. This research strategy can be a useful research strategy when a researcher seeks to examine the relationship between contexts and phenomenon of interest.

An experiment is a research method to study a phenomenon in a controlled context (Pinsonneault and Kraemer 1991). A researcher is able to manipulate independent variables and observe the relationship between the manipulated (independent and dependent) variables. Moreover, a researcher is able to control the laboratory context and independent variables directly, so that this research method allows a researcher to investigate only in the present context. A laboratory experiment is appropriate where the number of experimental subjects and groups are relatively small, and well-defined constructs and propositions are designed (Pinsonneault and Kraemer 1991).

Unlike these two methods, survey research allows a researcher to study a phenomenon in a variety of natural settings (Pinsonneault and Kraemer 1991). Survey research is considered as an appropriate research method when a researcher has very clearly defined independent and dependent variables as well as the specific model of the expected relationships that can be tested by observation of a phenomenon. Pinsonneault and Kraemer (1991) suggested that survey research can be a useful research strategy in the following contexts:

a) When a researcher has a research interest regarding “what happens?” and “how and why a phenomenon takes place”? Therefore, survey research is an appropriate research method to obtain answers for questions related to what, how and why, how much and how many.

b) In a case that it is not allowed or is undesirable for a researcher to manipulate independent and dependent variables.

c) When the phenomenon of interest should take place only in natural settings.

d) When the phenomenon of interest occurs in a present or recent time period.

### **3.2 Characteristics of Survey Research**

Survey research has three different distinctive characteristics (Pinsonneault and Kraemer 1991). Firstly, the purpose of survey research is to quantitatively describe the partial phenomenon in a population. Survey analysis is generally used to explain the relationship between variables or to produce results through a pre-determined population (Glock 1967). Survey research is a quantitative research methodology that needs standardized information about research subjects. Individuals, groups, organizations or communities can be research subjects.

Secondly, the main method to collect data is to ask structured and pre-determined questions to research subjects. The responses of questions are used as data for quantitative analysis.

Finally, data is usually collected from a sample that is a part of a research population. A researcher can get findings through analyses of the collected data from the sample, and in turn these findings can be generalized to results of the population. For example, in order to investigate the consumption behaviours of teenage girls of cosmetics, a researcher examines the behaviours of cosmetic

consumption using 100 teenage girls and generalizes the results to the overall teenage girls' behaviours.

### **3.3 The Purposes of Survey Research**

Survey research can be used for the purpose of exploring, describing, or explaining a phenomenon.

In explorative research, survey research is mainly used to investigate the constructs related to the research of interests (Pinsonneault and Kraemer 1991). For this purpose of explorative research, the survey research method can be applied to purify the concept measurement or be employed to investigate the scope of responses which may take place in the population of interest. In conducting explorative research, the researchers design what and how constructs, concepts, and variables must be measured. It is, therefore, rare that the explorative research method is used at the last step of survey research. Explorative surveys must be employed as the most fundamental means for further research, while descriptive or explanatory surveys are applied to develop constructs and to investigate in detail with a systematic procedure (Babbie 1973; Dillman 1978; Fowler 1984). In sum, the main objective of explorative survey research is to provide a basis for the design of a detailed, elaborate survey; thus, this method as used in a loosely structured manner is used to understand various responses in a population of interest from a great deal of perspectives.

Survey research for the descriptive purpose is utilized to find out what situations, events, attitudes or opinions are occurring in a population (Pinsonneault and Kraemer 1991). The main objective of descriptive survey research is to examine the distribution of a partial event in a population, so a researcher who is interested in simply describing a distribution or comparing the difference between distributions can employ this method. Questions for descriptive analysis are provided not to test a theory, but to describe a truth. By adopting this research method, researchers can, for example, investigate what types of members in an organization take advantages of computers, what types of people possibly work at home after working in an office, what equipment they exploit to complete a given task, and so on.

Explanatory survey research is used to test a theory or a causal relationship (Pinsonneault and Kraemer 1991). That is, survey research focused on explanation asks about the relationships between variables. Therefore, since the objective of explanatory survey research is to uncover the underlying relationships between variables, a researcher must provide a theoretical foundation regarding how variables are related to each other and why they are linked to others. A theory that is supposed to be tested through explanatory survey research includes a variety of variables and assumes not only the relationship between variables but also the direction of the relationship. For example, the researcher can assume that a variable “A” and “B” are positively or negatively related, or the variable “A” affects “B” positively or negatively. A researcher can use the explanatory survey research method to establish a causal relationship, and then to obtain an answer about why the relationship between variables exists.

### **3.4 Survey Research as the Main Research Strategy**

There are some problems with using case studies and experiments as the main research strategy of this research.

Firstly, case study research is the research strategy which focuses on understanding the dynamics present within a single setting (Yin 2002). Thus, researchers get not various but deep information of a phenomenon of interest in a single setting. However, the purpose of this research is to find the influence of product design on brand equity and for the purpose of this study, the different data from various sources has to be collected.

Secondly, experiment research in the proper research is where a researcher can have perfect control over the variables in which a researcher is interested. However, the basic principle of this research is to examine consumers' behaviour such as beliefs and thoughts in a natural setting. Besides, it is not possible for a researcher to have perfect control over the variables in a natural setting.

Thus, survey research was chosen for the main research strategy of this research. The reasons that survey research can be the appropriate strategy for this research are as follows:

Firstly, as previously stated, the purpose of this research is to investigate if product design could be a critical tool for improving brand equity and if it could improve the brand image and brand equity. This research is composed of three



steps for this purpose. In the first step, the importance of product design on product evaluation is verified, and the effect of design attributes on product evaluation is examined by investigating the moderating effect of product design on the relationship between brand and product evaluation. In the second step, consumers' psychological responses to product design are examined and types of design image are developed. Finally, the relationship between design image, brand image and brand equity are investigated using the types of design image which are developed in the second step. Essentially, in each step, the relationships between independent and dependent variables were clearly defined through literature review. As Glock (1967) suggested, survey analysis may be primarily concerned with relationships between variables, thus survey research could be a proper strategy to find out the relationships which are assumed in this research.

Secondly, the hypotheses that were developed in each step have been derived from past research which is related to brand equity and product design. Various methods for testing the study hypotheses which involve multiple aspects exist. Mainly, these methods are categorized into two approaches - model building and empirical data collection (Kotler 1971). Lunn (1978) suggested that the developments in market research, especially after adopting the psychosociological variables for understanding consumer behavior in a given market, have made the quantitative techniques more vital than ever. Furthermore, Lunn (1978) indicated that identifying the most relevant criteria which can explain consumer behavior enables a significant shift towards a model building approach. In order to test the hypotheses and the model which is built through literature review, it is necessary

to collect empirical data and analyze it. Thus, survey research is the appropriate way to collect the data.

Thirdly, the purposes of this research are heavily related to purposes of survey research, especially, descriptive and explanation purposes. In the first step, the positive effect of design attributes on product evaluation is hypothesized and tested. In addition, in the third step, the positive relationships among design image, brand image and brand equity are hypothesized and the model is tested. These hypothesized relationships relate to the explanation purpose of survey research. Furthermore, in the second step, consumers' psychological responses to product design are examined in the market. It is related to the descriptive purpose. Thus, using the survey research, the goal of this research can be achieved.

Lastly, this research is based on consumers' behaviour, especially, consumers' thoughts about brands and product design. The relationships between variables which are hypothesized in this research can be found using the information of consumers' behaviour. In order to find the exact relationship, the information of all consumers in the market has to be collected and analyzed. However, it is not realistic and thus, survey research is used for this research because in the survey research, information is generally collected for about only a fraction of the study population, and the findings are able to be generalized to the population.

## **3.5 Research Procedure**

This research consists of two distinct phases, namely a literature search and empirical studies.

### **3.5.1 Literature Search**

Based on the scope of the research aim, objectives and research questions outlined in Chapter 1, the literature search has been undertaken in four major areas:

- (a) Definition and theories of brand equity.
- (b) Definition and theories of brand image.
- (c) Importance of product design.
- (d) Definition and types of design image.

Consequently, to gain a better understanding of the purpose, the search was extended to other fields, such as consumer psychology. All these topics enabled the researcher to:

- (a) Get a better understanding of the application of product design into building up brand equity.
- (b) Develop a wider definition of the concept of brand, brand equity, brand image and design image.
- (c) Identify a theoretical base for developing the study model.
- (d) Explore relationships among key variables in the literature and hypothesize the relationships among variables.

### **3.5.2 The Empirical Studies**

This research is composed of three steps which all involve the use of empirical studies for the purpose of this study. Firstly, in order to verify the importance of product design on product evaluation, the effect of design attributes on product evaluation was examined by investigating the moderating effect of product design on the relationship between brand and product evaluation. In the second step, consumers' psychological responses to product design were examined and types of design image were developed. Finally, the relationship between design image, brand image and brand equity were investigated using the types of design image which were developed in the second step.

It is very important to verify the basic assumption that there is a positive relationship between product design and product evaluation because the main model of this research, which is the relationship among brand image, design image and brand equity, cannot be tested without the assumption. Therefore, the importance of product design on product evaluation is verified in the first step.

After verification of the positive effect of product design on product evaluation, types of design image and the scale of each design image type have to be developed. The studies regarding design image and its measurement scale has rarely been carried out compared to research regarding brand image, and thus the generalisable measurement scale of design image has not been developed. Thus, in order to investigate the main model of this research, which is the relationship among design image, brand image and brand equity, the measurement and dimensions of design image are developed in the second step.

The empirical studies follow the following steps.

### **3.5.2.1 The 1<sup>st</sup> Step: Verifying the influence of product design on product evaluation by comparing the brand effect with design attribute effect on product evaluation**

The purpose of the first step is to verify whether product design can play an important role on consumers' product evaluation. It could be the basic proposition which has to be tested for the purpose of this research, because the relationship among design image, brand image and brand equity could be investigated after verification of the importance of product design on product evaluation. For the purpose of the 1<sup>st</sup> step, an experiment was conducted, and the influence of design attributes on the importance of brand information in the product evaluation process was tested. If design attributes decrease the value placed on brand information in the product evaluation process, it could suggest that design attributes could have a significant effect on product evaluation. Decreasing the effect of brand information on product evaluation means increasing the effect of design attribute information on product evaluation when consumers get both brand and attributes information for the evaluation of a product.

These experiments were conducted for a week (10th - 16th May 2006), and data was collected through direct contact with the respondents. The collected data was analysed using methods such as frequency analysis, T-test and ANOVA analysis.

### **3.5.2.2 The 2<sup>nd</sup> Step: Finding the design image dimensions as consumers' responses to product design**

After finding the significant effect of product design on product evaluation, the purpose of the 2<sup>nd</sup> step is to examine consumers' psychological responses to product design and develop types of design image. In order to investigate the relationship among design image, brand image, and brand equity which is the main goal of the dissertation, types of design image have to be developed. For this purpose, three times of studies were conducted using three product categories which were mobile phone, mp3 player, and toiletries. Design image items were generated in the first study using free-association method, and types of design image dimensions and its scales were developed in the second study. Lastly, design image dimensions and its scale were validated in the third study.

The survey was conducted to investigate consumers' perception of product design, and a framework of design image dimension was developed. This survey was performed between Oct 2006 and May 2007. Data was collected through direct contact with the respondents. The collected data was analysed using methods such as frequency, factor and regression analysis.

### **3.5.2.3 The 3<sup>rd</sup> Step: Investigating the effect of design image on brand image and equity**

The purpose of the 3<sup>rd</sup> step is to investigate the effect of design image on brand image and equity and find the differences of design image effect on brand image

and equity between utilitarian and symbolic products. Six types of design image which were developed in the 2<sup>nd</sup> step were used to test the relationship among these variables.

The main goal of this step is to find the relationship among design image, brand image and brand equity. The effects of two key variables which are considered as the important factors for creating brand equity in this research was investigated in this step. In addition, this step compared the effect of design image on brand image and brand equity between utilitarian and symbolic product. The effect of design image on brand image and brand equity could be differed by the type of products. Design image could have a stronger effect on brand image and brand equity in the product category as consumers pay more attention to design attribute in their product evaluation process than in the product category where they consider the functional attribute as the important criteria to evaluate products. To find the differences of the design image effect on brand image and equity between utilitarian and symbolic products, the relationships among design image, brand image and brand equity were analyzed in two product categories and compared to each other.

For this purpose, a survey was conducted and the research model which was about the relationship among design image, brand image, and brand equity was tested using mp3 players (utilitarian product) and toiletries (symbolic product).

This survey was performed from Oct 2007 until Nov 2007. Data was collected through direct contact with the respondents. The collected data were analysed using methods such as frequency, descriptive, factor and ANOVA analysis, and

model was tested using the Lisrel program (structural equation model).

Figure 3.1 shows the process of this research

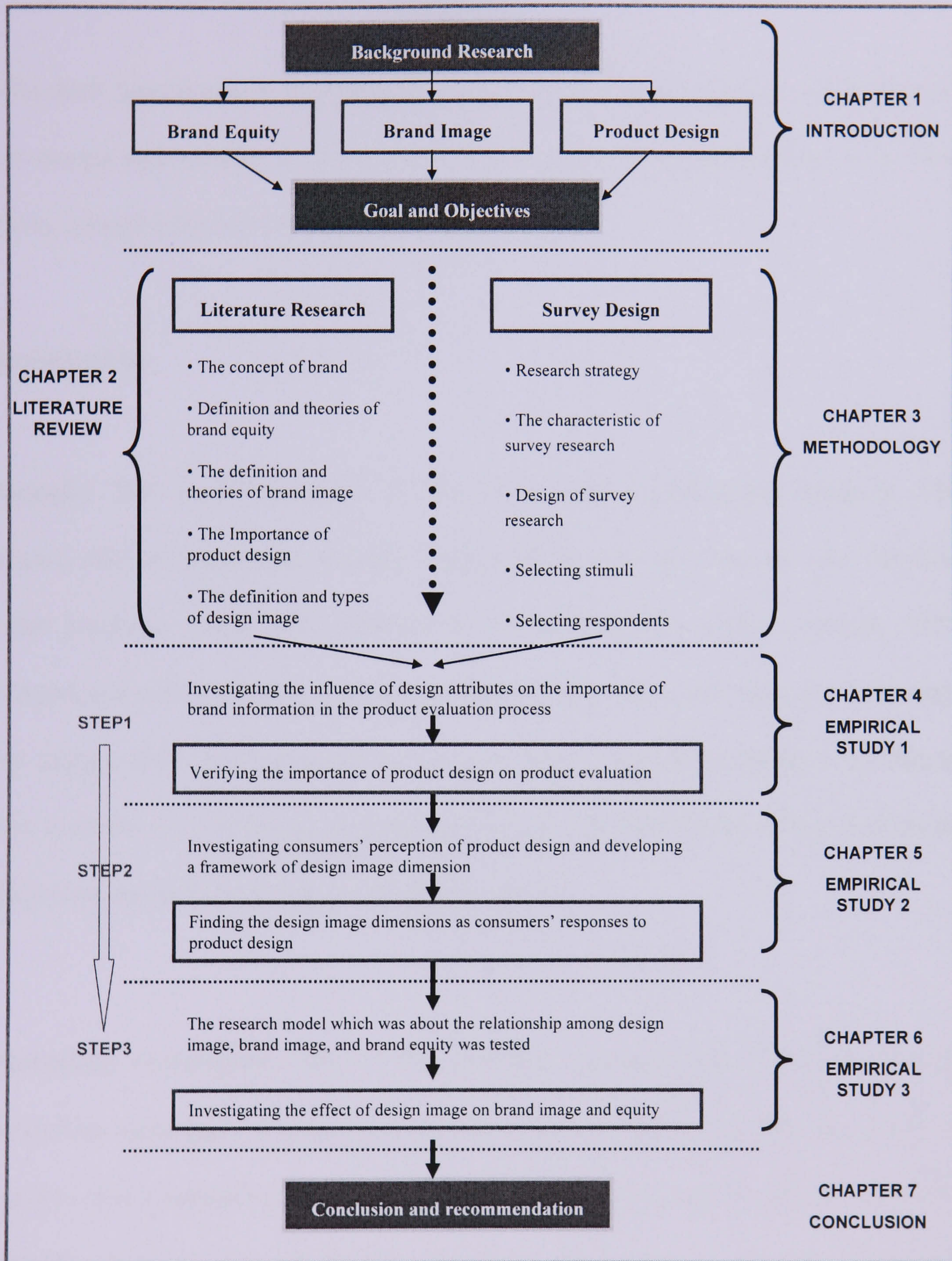


Figure 3.1 The Process of Research



### **3.5.2.4 General Things for Empirical Studies**

#### **a) The pilot study**

The draft questionnaire was developed and tested in a pilot study with respect to its design and validity in every step. After setting the questionnaire in its final form, a large scale survey was undertaken.

#### **b) Sampling**

**Sample:** The sample selected for this study was undergraduate students. The reason that undergraduate students were selected was that they are very familiar with products which were selected as stimuli (trainers, mobile phones, MP3 players and toiletries) and, as a general trait of their age group, they are influenced by design when they compare products or make a purchase decision. However, the students were studying subjects not closely associated with design and could therefore be considered not overly design aware.

**Sampling techniques:** One of the common concerns about any research is sampling techniques. A population is the entire set of persons, objects, events or entities that a researcher intends to study. However a population study may not be possible in many research studies. Therefore, the researcher selects a sample of the population and predicts the characteristics of the population with the results of the sample. Sampling techniques mean the different ways of selecting the sample

from the population. Sampling techniques can be classified into probability and non-probability techniques.

Probability sampling “involves random sampling of units from the population at some stage in the sampling process” (Krathwohl 1997, p.163). The probability sampling technique includes simple random, systematic and stratified. Random sampling is the sampling technique by which each member of the population has an equal and known chance of being selected. Systematic sampling is called an  $N^{\text{th}}$  name selection technique. This sampling technique calculates the required sample size and then, every  $N^{\text{th}}$  record is selected from a list of population members. Stratified random sampling is another form of modified random sampling. In this case, the entire population is divided into homogenous subgroups that share a common characteristic and random sampling is carried out on each group.

While all probability sampling techniques create a sample from the entire population using a random process, the non-probability sampling does not. “Non-probability sampling methods are procedures that do not include random sampling at some stage in the process; because of their convenience, they are common” (Krathwohl 1997). Non-probability sampling technique includes judgmental, quota, snowball, and convenience sampling methods.

The judgmental sampling technique involves judgements by researchers of which characteristics of the target population should be included in the sample. The quota sampling technique has some similarities with stratified sampling. However, in quota sampling, the selection of the sample is non-random. Like stratified

sampling, the researcher divides the population into homogenous subgroups and then, convenience or judgment sampling is used to select the required number of respondents from each subgroup. The snowball sampling technique is used to discover members of population not otherwise easily identified, by starting with known members and asking for referrals to other knowledgeable individuals. The convenience sampling technique is the method of choosing items arbitrarily and in an unstructured manner from the population. According to Krathwohl (1997), the convenience sampling technique, also called the grab method, is the most commonly used non-probability technique and employed in many practical situations because it is considered convenient, easy and quick.

This research uses the convenience sampling technique. In order to find the generalizable design image dimensions, it is necessary to collect large and various samples. The advantage of this technique which is the high accessibility to respondents, and thus it is the proper sampling technique for the research which needs large and various respondents (Malhotra and Birks, 2003).

**Sample size:** Hair et al. (1998) suggested criteria to determine an appropriate sample size. When maximum likelihood estimation is used, as in this research, a minimum sample size of 100 to 150 is recommended. In addition, the sample size should be at least five times the number of parameters estimated. The most important model (step 3) in this research had 11 variables (6 design image dimensions, 3 brand image dimensions, and 2 brand equity variables) and thus a maximum of 66 parameters (11 variances and 55 covariances) were estimated, requiring at least 330 observations. Thus, 360 observations which were used in this research are close to the required sample size. In step 2, in order to test the

relationship between 6 design image dimensions and attitude, 7 variables were included and a maximum of 28 parameters (7 variances and 21 covariances) were estimated, requiring at least 140 observations. The 472 observations which were used in this step are sufficient to test the model. The observations of the other studies which did not use maximum likelihood estimation were over the minimum sample size of 100 which is suggested by Hair et al (1998). Thus, the sample size of this research was enough to get meaningful information.

### **c) Stimuli**

The stimuli which were used in empirical studies are trainers, mobile phones, MP3 player and toiletries. Three reasons for the selection of these products as stimuli are that:

Firstly, these products are currently important and well-known product groups to undergraduate students who are respondents of this research.

Secondly, these products have various colours and shapes across the various products in the market and can be characterized by various design attributes.

Thirdly, these should be product groups in which consumers consider design as an important criterion when they make a purchase decision.

### **d) Scales**

Nominal, interval scales were mainly used. A Likert-type rating scale (interval scale), with an unequal 1-7 agreement format, was chosen. It was noted that the mid-range option of 4 in the scale could lead to respondents choosing the middle option; however, equal number options could have resulted in respondents favouring one side. In addition, open-ended questions were given to respondents if it was necessary. For example, respondents were asked to write words which they associate the design of their mobile phone with to generate design image items in the second step.

#### **e) Data processing and analysis**

**Editing:** The purpose of editing is to confirm that a survey respondent answered all questions presented on a questionnaire. Besides, this is also a process of checking if the respondents convey their full thoughts, opinions and feelings to the researcher through a questionnaire. As a matter of fact, a number of respondents in this study did not answer a couple of questions, particularly open-ended questions. Therefore, this study did not infer nor edit the unanswered survey items, in order to avoid misinterpreting the responses. In addition, unreliable responses were deleted from further analyses.

**Statistical Techniques:** In order to test the main research model which is about the relationships between brand image, design image, and brand equity, regression analysis and structural equation model can be used. Regression analysis is a statistical tool to investigate the relationships between variables. When the researcher wants to investigate the causal effect of one variable upon another, for

example, the effect of design image on brand equity, regression analysis could be a proper method to test the relationship. To explore such issues, the researcher collects data on the underlying variables of interest and employs regression to estimate the quantitative effect of the causal variables upon the variable that they influence. The researcher also typically assesses the statistical significance of the estimated relationships which is the degree of confidence that the true relationship is close to the estimated relationship. However, in regression analysis, it is normal that the relationships between a single dependent variable, and two or more independent variables are investigated. When the researcher wants to examine the relationships among the independent variables, the researcher must estimate the parameters of more than one regression equation because a model contains more than a single dependent variable. In addition, in this case, a dependent variable in one regression equation can be an independent variable in another regression equation in a research model. Multiple equation models in which a dependent variable in one equation appears as an independent variable in another equation are referred to as structural equation models.

Structural equation models (SEM) are one of the most widely used methods for analyzing multivariate data in the social and behavioural sciences. SEM is attractive because it enables researchers to test a wide range of hypotheses concerning the relationships among any combination of manifest and latent variables (Mcquitty 2004). SEM is the most appropriate technique when multiple relationships between dependent and independent variables are studied. Furthermore, SEM is well suited for confirmatory analysis and allows for efficient hypothesis testing, especially of complex models. These characteristics are

important in the research because the main purpose of this research is to examine the relationship among three variables which are brand image, design image, and brand equity. Thus, the research model was tested by SEM.

**Statistical Program:** The SPSS program was mainly used to analyze the data. As the data generated by this study contained both nominal types and interval types, non-parametric (e.g. crosstab) and parametric statistics (e.g. Factor, ANOVA and regression analysis) were mainly applied (Siegel 1956). In addition, to examine the main study model which is the relationship among design image, brand image and brand equity, the Lisrel program was applied. LISREL is a statistical computer program that is mainly used to perform analysis of covariance structures, also known as structural equation model (SEM). In all these significance tests, 5% or 1% confidence levels were set to accept or reject the study hypotheses.

Table 3.1 summarizes the process of empirical studies

In order to test the model which was developed in this research, a total of 1,634 undergraduate students were selected as respondents and the mean age of total sample was 22.6. According to the research conducted by Korea Consumer Agency (2007), 67% aged between 20~29 consider design as the most important criterion in their purchase decision. Thus, taking into consideration the mean age of respondents, the selected sample matched with the criterion of sample selection which is that respondents should be influenced by design when they compare products or make a purchase decision. The average percentage of male respondents was 47.8 and it means that the effect of the exogenous variable (i.e. sex) was controlled. However, the sample which was used in this research was

limited to Korean students and thus, it has some limitations for generalizing the results of the research. For the 1<sup>st</sup> step, a survey was conducted with 135 undergraduate students. The mean age was 22 and 45% of the respondents were male and 55% were female. In the 2<sup>nd</sup> step, five surveys were conducted with 1,139 undergraduate students. 49.4% of respondents were male and the average age was 23.6. In the case of 3<sup>rd</sup> step, two surveys were carried out. The sample size was 360 and 48.9 % of the respondents were male and the mean age was 22.3.

Steps	Purposes	Methods	Respondents	Stimuli
Step 1	Verifying the effect of design attributes on product evaluation	1 <sup>st</sup> Questionnaire	135 undergraduate students (female 55%, the mean age= 22, S.D. =2.52)	Trainers
Step 2	Developing types of design image	2 <sup>nd</sup> Questionnaire (Selecting three design)	100 undergraduate students (male 59%, mean age = 24.4, S.D.=2.59)	26 designs of mobile phone
		3 <sup>rd</sup> Questionnaire (words generation for design image)	145 undergraduate students (female 52%, mean age = 23.2, S.D.=2.45)	Mobile phone
		4 <sup>th</sup> Questionnaire (Finding dimensions of design image)	472 undergraduate students (female 51%, mean age = 23.5, S.D.=2.16)	3 designs of mobile phone
		5 <sup>th</sup> Questionnaire (selecting product categories)	100 undergraduate students (female 56%, mean age = 24.2, S.D.=2.62)	11 product categories
		6 <sup>th</sup> Questionnaire (Experimental validation)	322 undergraduate students (male 52.8%, mean age = 22.8, S.D.=2.37)	MP3 player and Toiletries
Step 3	Investigating the relationship among design image, brand image and brand equity	7 <sup>th</sup> Questionnaire	360 undergraduate students (male 48.9%, mean age = 22.3, S.D.=2.07)	MP3 player and Toiletries

Table 3.1 A Summary of the Process of Empirical Studies



# CHAPTER 4 EMPIRICAL STUDY 1

**Step 1: Verifying the influence of product design on product evaluation by comparing the brand effect with design attribute effect on product evaluation.**

## 4.1 Introduction

The goal of this step is to verify the effect of product design on consumers' product evaluation. A great deal of research has focused on the effect of product design attributes on consumers' product evaluation, and there is consensus about the significant effect of product design on product evaluation (Bintner 1992; Donovan and Rossiter 1982; Mehrabian and Russell 1974; Terwiesch, and Ulrich 2007). However, very little research has been conducted that directly explores the relative effect of product design attributes compared to other attributes (i.e. brand name) on product evaluation.

The design of a product is one of its dominant features; hence, it would be valuable to investigate the influence of design over the brand effect in the product evaluation process. Therefore, for the purpose of this study, the effect of design attributes on consumers' product evaluation was compared with the brand name effect, which is considered as the one of the most critical factors in product evaluation.

## **4.2 Theoretical Background and Hypothesis**

### **4.2.1 The Role of Brand Name and Design Attributes in Product Evaluation Process**

A great deal of research has focused on the effect of branding and product attributes on the evaluation of products by consumers. Several issues have been investigated in this area, including the issue of how the association of branding and product attributes are interpreted and how it influences product evaluation (Srinivasan and Till 2002; Van Osselaer and Alba 2000; Van Osselaer and Janiszewski 2001).

Much of the research in the field has focused on the role of brand name in the product evaluation process. One of the theories that can explain the role of brand name in the product evaluation process is the concept of brand equity (Aaker and Biel 1992; Leuthesser 1988; Maltzs 1991). There are many approaches to measuring brand equity. A common measurement approach is to treat brand equity in terms of its effect on product evaluation (Louviere and Johnson 1988; Park and Srinivasan 1994).

Although the empirical support for the concept of brand equity is limited, the basic concept of brand equity can be explained by two theories. One theory which explains brand equity is the spreading-activation theory of human associative memory (e.g., Anderson and Bower 1973; Anderson and Lebiere 1998). According to this theory, the declarative knowledge of consumers is defined in

terms of the network of concept nodes that are connected by links and strengthened whenever two events co-occur. When consumers experience different concepts, they form associations. When consumers think of a brand, they associate the positive outcomes that are connected with the brand and they link the product to these outcomes. Therefore, the more a brand name co-occurs with a benefit, the stronger the link between the brand name and the benefit, thus building brand equity.

Another theory that explains brand equity is the cue-interactive model. In this model, it is assumed that the predicted level of the outcome of consumption of the product, or the quality of the product, is a sum of all currently present cues such as a brand name. In addition, it is assumed that the level of association strength depends on the elimination of any discrepancy between the predicted and actual levels of a consumption outcome (Van Osselaer and Alba 2003). The assumptions of cue-interactive models suggest that the concept of equity could be divided into two categories: brand equity and attribute equity. Van Osselaer and Alba (2003) suggest that insofar as brand equity can be operationally defined as the impact of brand name on benefit predictions, attribute equity can analogously be defined as the influence of attribute information on benefit predictions.

Moreover, the literature on the role of branding suggests that the impact of a brand name tends to override other information about the product. The brand name may be used as a basis for heuristics in purchasing decisions. The presence of a brand name may override information concerning other important attributes of the product (Van Osselaer and Alba 2000). It shows that the effect of branding

has a greater significance than the effect of product qualities and attributes. Furthermore, some researchers suggest that brand names play an important role in purchasing decisions because they are a 'high-scope' cue that has implications for a wide variety of attributes. Consequently, branding can be a sufficient criterion for consumers' decision-making, even to the point of exclusion of other products or brands from consideration. Notwithstanding the importance of product attributes, the effect of brand names on product evaluation has weighed relatively more in past research.

However, if consumers receive sufficient product information, they would tend to use that information to evaluate a product. For example, brand names, such as BMW, would be a strong evaluative criterion in the decision making process of purchasing a car. However, product attributes such as a five-year guarantee from a competing brand such as Volvo, would affect the decision-making process.

The main attributes that can influence consumers' evaluation processes are design attributes. Bloch (1995) suggested a conceptual model that describes how product design relates to consumers' psychological and behavioural responses. In this model, product design could elicit a variety of psychological responses (both cognitive and affective) from the consumer. In turn, these psychological responses to design lead to behavioural responses. The specific design of a product is closely related to the performance and functions of the product and can be an important attribute that determines the product's derived benefits. In addition, the point of view that consumers can predict the performance of the product with a specific design attribute, the design attribute of a product can be categorized as product-

related attributes. Therefore, as Van Osselaer and Alba (2003) suggest, if attribute equity can be defined as the influence of the attribute on product benefit prediction, design equity can be defined as the influence of design information on benefit predictions. It means that product design can affect product benefit prediction and evaluation.

#### **4.2.2 The Relationship between Design Attribute Effect and Brand Effect on Product Evaluation**

When consumers are given brand and quality attributes together, the influence of brand names on their product evaluation is likely to dominate. For example, Van Osselaer and Alba (2000) suggested that, when consumers learned the relationship between brands and quality, it could inhibit the investigation of the quality implications of specific attributes. Maheswaran *et al.* (1992) have shown that consumers labelled as “cognitive misers” are usually reluctant to think extensively about purchasing decision. When people are unmotivated to think extensively about product information, they have a tendency to use brand names as a heuristic basis for judgment rather than consider the specific attribute information. This is prevalent in low-involvement purchase situations. Consumers who have low involvement in a product are not interested in engaging with detailed information about design attributes but tend to rely on brand recognition to give them all the information they need to make their purchase decisions.

Another theory supporting this is a blocking phenomenon of consumers learning tasks (Dickinson, Shanks, and Evenden 1984; Waldmann and Holyoak 1992). In

general, consumers are not exposed to all predictive cues simultaneously. When consumers are exposed to brand cues as well as attributes that determine quality, a blocking phenomenon can be generated. It means that the brand may prevent consumers from learning about additional attributes.

This approach however, may not always hold true. Consumers usually use brand name as a heuristic basis for judgment rather than consider the specific attribute information, especially in low-involvement purchase decisions. However, if they receive sufficient product information to support their evaluation process, they would tend to use that information. The reliance on a brand name in the product evaluation process could be reduced by presenting consumers with information on the product's attributes.

In addition, Van Osselaer and Alba (2003) used cue-interaction models to show that the use of attributes that can induce benefits to promote the original category could decrease the value of a brand name by switching the locus of equity to its attributes in brand extensions. These models indicated that the predicted level of benefit is a sum of the strengths of its associations with all present cues including brand names as well as attributes. They further suggested that if the cue-interaction models were true, attributes would often compete for equity. In other words, the influence of brand and attribute information on benefit prediction can compete. Their study shows that the use of attributes could create competition between brand equity and attribute equity and influence consumers' evaluation of the original and extended category. Although this study addressed issues of brand extension, it can be developed to find the role of attributes when consumers get

both brand and attributes information for the evaluation of a new product. Based on these findings, it is possible to hypothesize that the provision of product design information attributes with which consumers can predict product quality may reduce the value of branding information in their product evaluation.

In order to investigate whether design attributes could decrease the value placed on brand information, the researcher tested the following hypothesis:

H1: The value placed on brand information in consumers' product evaluation is lower when the design attribute is provided than when the design attribute is not provided.

#### **4.2.3 The Ambiguity of Design Attributes and the Effect of Providing Evaluation Criteria of Design Attributes on Product Evaluation**

Consumers often cannot understand design information because it is quite difficult to evaluate the benefits of design attributes.

A number of studies related to the influence of clear or unambiguous outcome information have been published in consumer behaviour research (Hoch and Ha 1986; Mooy and Robben 2002). In learning tasks, ambiguity can be defined in terms of a lack of discriminating outcome information. It is quite difficult to predict product quality when clear information is not given to them. For example, Hoch and Ha (1986) considered the assessment of polo shirt production an

ambiguous trial experience, because what constitutes quality in polo shirts can be interpreted in a variety of ways.

Psychophysicists have demonstrated that a person's memory for magnitude (e.g., intensity of light, depth of a colour) decays very rapidly (Algom and Cain 1991; Hubbard 1994). One of the reasons that can explain this phenomenon is that it is difficult for them to undertake rehearsal and elaboration, because individuals do not have the necessary vocabulary with which they can classify the different level of intensity. In the same way, memory for attributes that have a lack of discrimination outcome often requires memory for magnitude because they tend to vary on a continuum. Therefore, memory for ambiguous attributes could be improved by providing consumers with a method to encode the experience meaningfully. Siegel and Siegel (1976) suggested that memory for colours improved when they provided subjects with a rating scheme (in which the numbers 5, 15, 25, and 35 were placed on the colours blue, green, yellow, and red) and asked the subjects to mentally place colour mixtures within this rating scheme. Lucy and Shweddler (1988) also found that when subjects related the colours to tangible things, they remembered colours more clearly. When subjects were given the colours (i.e. white), they matched this colour with the whiteboard in the room. Shapiro and Spence (2002) suggested that providing criteria to evaluate sensory attributes could encourage decision makers to pay attention to those features. It could reduce the likelihood of using idiosyncratic decision rules (Wilson and Schooler 1991) and increase the ease of alignment. Finally, this could result in a greater amount of weight being placed on the sensory attribute when evaluative criteria are provided (Shapiro and Spence 2002). Further support for



this supposition comes from work by West et al. (1996). In this research, they provided the subject with a basic education about a different individual attribute of quilts and how it applied to the overall quilt pattern (e.g., number of blocks, number of colours, arrangement or placement of the blocks) as consumption vocabulary. They suggested that when consumers are given a consumption vocabulary that differentiates holistic visual objects (in their case, quilts), it increases the consistency of preferences and the ability to articulate the basis on which preference judgments were made. Finally, this could result in a greater amount of weight being placed on the sensory attribute when evaluative criteria are provided (Shapiro and Spence 2002). Similarly, Na and Hwang (2003) suggested that consumers' preference variation is lower when the criteria for evaluation of sensory attributes were given.

On the other hand, design attributes are often ambiguous and provide limited support for the evaluation of the benefits derived. Often, consumers do not understand the function and benefit of a specific design attribute, even though they like the design. Despite this, consumers often place more weight on these attributes than on verbally described market information (Shapiro and Spence 2002). For example, a consumer who wants to buy an mp3 player might place more weight on design attributes such as a slim, compact and portable design than on technical information. In other words, although consumers lack the knowledge needed to evaluate the function of a design attribute, they nonetheless use the design attribute in their product evaluation. The ambiguity of design attributes provide a foundation to expand on the study of Van Osselaer and Alba (2003). To bring out a significant decrease in the value of brand information by consideration

of a product attribute in a consumer's product evaluation, the product attribute has to be considered as diagnostic information for their evaluation task. However, it is quite difficult for consumers to evaluate the value of design attributes because the benefits of design attributes are often less tangible than other attributes. This ambiguity of design attributes causes difficulty in prediction of product quality and, therefore, complicates the use of design attributes as viable criteria for product evaluation. For example, when consumers evaluate a flat screen television, they may not use this information to evaluate the product because they may not know the benefits of the flat monitor design compared with the convex surface one. If the ambiguity of design attributes can be diminished by the provision of criteria, consumers could perceive the design as useful diagnostic information and, in turn, decrease the influence placed on brand information due to the higher importance placed on the design attribute.

To sum up, it is more ambiguous to predict a product's functional benefits from its design attributes than general product attributes such as functions and ingredients. Research about ambiguous product information suggests that the ambiguity of design attributes interrupts the consumers' learning process and their memory of such attributes. This interruption causes difficulties when consumers use design attributes in product evaluation or prediction of product quality. However, consumers would find it easier to understand design attributes, and thus reduce ambiguity, if they have evaluative criteria, and hence more confidence in their evaluation process. Consumers would focus their information processing ability more on design attributes, and they can encode design attributes precisely in their memory.

Furthermore, when a design attribute is provided, the resulting level by which brand equity is decreased (Van Osselaser and Alba 2003) could be changed according to the evaluative criteria provided for the design attribute. This process may increase the tendency for consumers to depend on design to make their decision and leads to the second hypothesis:

H2: When the criteria for evaluation of the design attribute are given, the value placed on brand information in consumers' product evaluation is lower than when the criteria for evaluation of the design attributes are not given.

Figure 4.1 shows the hypothesized model of this research.

To sum up, design attribute information can have a moderating effect on the relationship between brand information and product evaluation. Furthermore, providing criteria for evaluation of the design attribute can accelerate the moderating effect of design attribute information on the relationship between brand information and product evaluation.

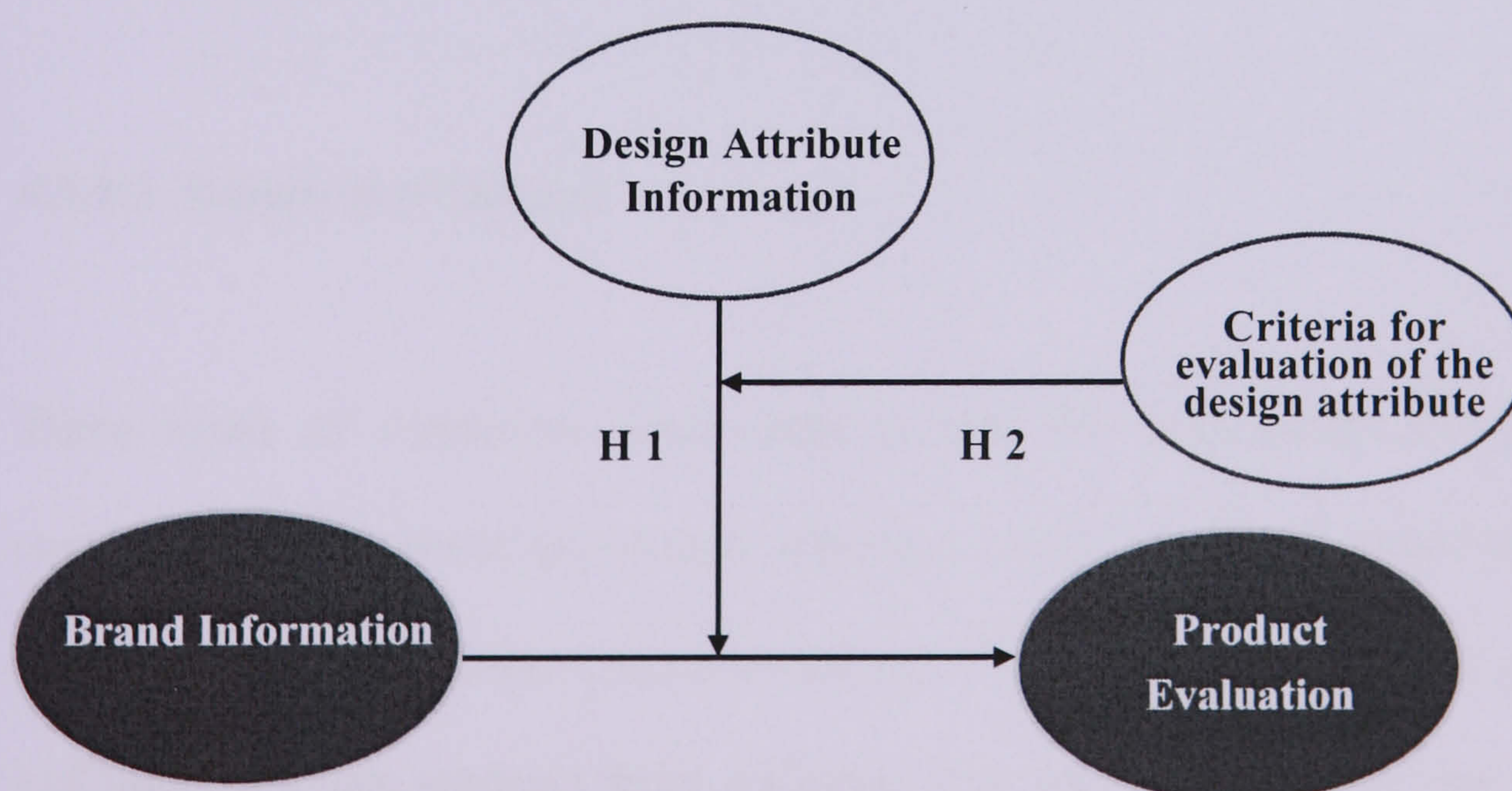


Figure 4.1 The Hypothesis Model

## **4.3 Empirical Study**

To test the effects of design attribute and related evaluation criteria on the value placed on brand information in consumers' product evaluations, changes in the information to which consumers were exposed while they learned about product quality were used. The method was adopted and revised from Van Osselaer and Alba's study (2003). Respondents were exposed to one of the following conditions: (1) the brand condition, (2) the brand and design attribute condition and (3) the brand and design attributes with evaluation criteria condition. In the brand condition, participants were given only brand information to predict product quality. In the brand and design attribute condition, brand information and design attributes were given to participants as information for product quality prediction. In the brand and design attributes with evaluation criteria condition, participants were given not only brand and design attributes, but also evaluation criteria for design attributes to predict product quality.

### **4.3.1 Method**

#### **4.3.1.1 Design and Subject**

Three kinds of conditions were used to test the hypotheses: (1) the brand condition, (2) the brand and design attributes condition, (3) the brand and design attributes with evaluation criteria condition. The sample selected for study was 135 undergraduate students from a Korean University. Forty-five percent of the respondents were male and fifty-five percent were female and the mean age was

22. Subjects were all students studying a wide range of subjects. They were randomly assigned to one of the three different conditions and every participant was shown product descriptions which included information about product features and product quality.

The experiment was composed of two phases which were the learning phase and the prediction of product quality phase. In the learning phase, participants were given product information which they could use when evaluating product quality, and in the prediction of product quality phase, participants were asked to indicate their assessment of the quality level of each product which had different features in brand and design attributes.

#### **4.3.1.2 Procedure**

**1) Learning Phase:** On the cover page of the description of stimuli, participants were told that the researchers were interested in finding out which are the factors that the consumers consider important when they purchase trainers. Participants were informed about the purpose of the survey and were asked to read some information. Next, respondents were provided with slides to learn about the different brands, features and the nature of quality in different trainers. Twelve profiles of trainers (shoes) were given to respondents in the learning phase. In the brand and design attribute with evaluation criteria condition, each profile described a particular pair of trainers, its model number, brand name (Highperf or Athlete), design type (frontline-up design or backline-up design), sole style (rubber flexi sole or herringbone sole), overall material (always Gore-Tex), and

quality level (1-5). To block the effect of respondents' knowledge about trainers on product evaluation of and avoid the evaluation with the inference through knowledge, the description of every pair of trainers (model number, brand name, design type, sole style, overall material and quality level) was created for the experiment using the features which do not exist in the market, and it was shown to respondents. In addition, designs that have not yet been launched in the market were selected and used in each brand. Respondents have not been exposed to these designs; thus, they could not associate the brand with the design which was given to them.

The Highperf brand name and the Frontline-up design type were for high quality trainers while the Athlete brand name and the Backline-up design type were for low quality trainers. Sole style and overall material were used as nonpredictive filler features. Half of the high-quality trainers and half of the low-quality trainers used herringbone sole (sole style). The other half used rubber flexi sole (sole style). All trainers had Gore-Tex material (overall material). Thus, overall material was a constant filler feature, and sole style was a varying filler feature that was uncorrelated with quality (cf. Van Osselaer and Alba 2003). Six of the trainers were high quality, and six were low quality in terms of our profiles. Respondents could learn which brand or design attribute was related to good product quality because they were given brand, design type, product quality level information at the same time as the information for evaluating product quality. In addition, evaluation criteria for design attributes were given. To encourage participants to evaluate design attributes, detailed information about design type were given in the learning phase (see Appendix 1).

In the brand and design attributes condition, there was no information about evaluation criteria for design attributes, but otherwise the information was the same as provided in the brand and design attribute with the evaluation criteria condition. In the brand condition, information about design type and evaluation criteria for design attribute were not provided, but otherwise were identical to those in the brand and design attribute with evaluation criteria condition (see Appendix 2).

Table 4.1 summarizes the conditions of three groups and providing information.

Conditions	Information Provided
Brand Condition (Group A)	Brand names (Highperf or Athlete) Sole style (rubber flexi sole or herringbone sole), Overall material (Gore-Tex) Product quality level (1-5)
Brand and Design Attribute Condition (Group B)	Brand names (Highperf or Athlete) Design types (Frontline-up or Backline-up design) Sole style (rubber flexi sole or herringbone sole), Overall material (Gore-Tex) Product quality level (1-5)
Brand and Design Attributes with Evaluation Criteria Condition (Group C)	Brand names (Highperf or Athlete) Design types (Frontline-up or Backline-up design) Description of Design Types Sole style (rubber flexi sole or herringbone sole). Overall material (Gore-Tex) Product quality level (1-5)

Table 4.1 The Summary of Three Conditions

**2) Prediction of Product Quality Phase:** Once the learning phase was completed, respondents were given different profiles of trainers. Eight profiles were created by combination of brands (Highperf and Athlete), design attributes (frontline-up design and backline-up design) and sole materials (rubber flexi sole and herringbone sole) (2\*2\*2).

Four of the trainers have high quality features (Highperf and frontline-up design), and four are related to low quality features (Athlete and backline-up design). The profiles contained information about trainer features and they were asked to predict the quality of each trainer (prediction of product quality phase - see Appendix 3).

#### **4.3.1.3 Measures**

**1) Knowledge and Involvement Measure:** The homogeneity of the three groups was tested by measuring the knowledge involvement about trainers. Involvement was measured on a seven-point scale (1=not at all, 7=a lot) by the degree to which participants think that: 1) trainers are necessary items, 2) trainers are useful and 3) the respondent is usually interested in trainers (Zaichkowsky, J. L. 1985a; 1994). The three items were averaged to form a product involvement index. To measure product knowledge, scales used in Park, Mothersbaugh and Feick's study (1994) were adopted. Product knowledge was measured on a seven-point scale (1=a little, 7=a lot) by the degree of 1) how much they knew about trainers, 2) how much they knew about trainers compared to their friends and 3) how much they knew about trainers compared to experts of trainers. The three items were averaged and used as a knowledge index.

**2) Dependent Measures:** In order to measure the quality of trainers, the respondents were given eight profiles of trainers. Four of the profiles included information of product features, using 2 (two brand names) x 2 (two design types) x 2 (two sole styles) factorial combination to construct the 8 profiles. In addition,



the constant filler feature (overall material) was provided to each profile. Respondents were asked to indicate the quality level on a seven-point scale ranging from -3 (low quality) to +3 (high quality) for each of the 8 trainers (see Appendix 9).

**3) The Value Placed on Brand Information:** The value placed on brand information was measured by a mean feature effect (MFE). The MFE is a common measure of brand part-worth utility or a brand weight, which is a common measure of brand equity (Van Osselaer and Alba 2003). In this study, a mean feature effect (MFE) of branding was computed by subtracting the average quality rating for low quality products (Athlete) from the average quality rating for high quality products (Highperf). To compute the average quality rating for low quality products (Athlete), the ratings for four cards which are related to low quality were summed. The average quality rating for high quality (Athlete) was computed in the same way (summation of the ratings for four cards which are related to high quality).

### **4.3.2 Results**

#### **4.3.2.1 Preliminary Analysis**

Three responses were excluded from the analysis because of incomplete responses. The homogeneity of experimental groups was tested in three ways. Firstly, in terms of the homogeneity of purchase experience, there was no significant difference among the three groups with regards to the purchasing experiences

during the last year (Chi-Squared=.135,  $p>.10$ ). Table 5.2 shows there was no significant difference among the three groups with regards to the purchasing experiences during the last year (Chi-Squared=.135,  $p>.10$ ).

		Group			Total
		A <sup>(1)</sup>	B	C	
Purchase	Yes	18	18	16	52
experience	No	27	26	27	80
Total		45	44	43	132

Pearson Chi-Square: 0.135( $p>.10$ )

(1) A: brand condition, B: brand and design attribute condition, C: brand and design attributes with evaluation criteria condition

Table 4.2 The Result of the Homogeneity Test (Purchase Experience)

Secondly, the researchers tested for differences among groups in product knowledge and involvement. Three items were used for each element. Cronbach's alpha was used to assess the reliability of product knowledge and involvement (Cronbach's alpha: .900 and .925 respectively, see table 4.3).

Construct	Measurement items	Cronbach's Alpha
Knowledge	How much do you know about trainers	.900
	How much do you know about trainers compared to your friends	
	How much do you know about trainers compared to experts	
Involvement	Trainers are one of my necessary items	.925
	Trainers are useful for me	
	I am usually interested in trainers	

Table 4.3 Reliability Test Results

In order to test the homogeneity among groups, an ANOVA using the product knowledge and involvement measures was run. Results show that there was no difference among three groups in product knowledge and involvement ( $F=1.405$ ,  $p >.10$  and  $F=1.278$ ,  $p >.10$  respectively, see Table 4.4). Therefore, the

homogeneity among the three experimental groups was confirmed as appropriate for comparing the effect of branding on the three groups.

Group	Involvement		Knowledge	
	Mean	F-Value	Mean	F-value
A <sup>(1)</sup>	4.0222		2.7630	
B	4.0455	1.278( $p>.10$ )	2.6591	1.405( $p>.10$ )
C	3.5736		2.3411	

(1): A: brand condition, B: brand and design attribute condition, C: brand and design attributes with evaluation criteria condition

Table 4.4 The Result of the Homogeneity Test

(Product Knowledge and Involvement)

#### 4.3.2.2 Test of Hypotheses

In order to test the hypotheses, a mean feature effect (MFE) of branding was computed by subtracting the average quality rating for low quality products from the average quality rating for high quality products. Therefore, the brand MFE of 6.77 for trainers in the brand and design attribute condition was computed by subtracting the average quality rating for Athlete trainers (-1.29) from the average quality rating for Highperf (5.48). Table 4.5 shows the results of brand MFE comparison in the brand condition and the brand and design attribute condition.

The results show that the difference of 3.76 in the size of the brand effect between the brand condition (MFE=10.53) and brand and design attribute condition (MFE=6.77) is statistically significant ( $t=2.737$ ,  $p <.01$ ; see Table 4.5). These results suggest that the value placed on brand information is diminished by providing design attribute information in the product quality evaluation.

	Brand Condition (Group A)		Brand and Design Attribute Condition (Group B)		Brand and Design Attributes with Evaluation Criteria Condition (Group C)	
	High Quality Brand (Highperf)	Low Quality Brand (Athlete)	High Quality Brand (Highperf)	Low Quality Brand (Athlete)	High Quality Brand (Highperf)	Low Quality Brand (Athlete)
	8.89	-1.64	5.48	-1.29	5.09	1.26
Brand Effect	10.53		6.77		3.83	
Difference of Brand Effect	Group A – Group B : 3.76*** Group B – Group C : 2.94**					

\*\*\*:  $p < 0.01$ , \*\*:  $p < 0.05$

Table 4.5 The Comparison of Mean Feature Effects of Brand

The effect of brand in brand and design attribute condition was significantly greater than the effect of brand in brand and design attributes with evaluation criteria condition ( $t=2.302$ ,  $p < .05$ ; see Table 4.5). This suggests that provision of evaluative criteria for the design attribute can make respondents use the design attribute more easily. The brand effect was reduced by providing evaluation criteria for design attributes in product quality evaluation.

To confirm the effect of the design attribute on product quality evaluation, a mean feature effect (MFE) of design attribute was computed in a same way as MFE of brand by subtracting the average quality rating for low quality design products (backline-up design) from the average quality rating for high quality design products (frontline-up design). The results show that the difference (3.29) in the size of the design attribute effect between the brand condition and brand and design attribute condition is statistically significant ( $t=3.748$ ,  $p < .01$ ; see table 4.6). Therefore, Hypothesis 1 is supported.

However, in the comparison between Group B (brand and design attribute condition) and Group C (brand and design attributes with evaluation criteria condition), the design attribute effect is not increased by providing evaluation criteria of design attributes. The result shows that the value of quality evaluation of trainers with the low quality design attribute in Group C increased compared to the value in Group B. There is apparently less effect when design attributes and evaluation criteria are given than when only design attributes are given.

	Brand Condition		Brand and Design Attribute Condition		Brand and Design Attributes with Evaluation Criteria Condition	
	High Quality Design (frontline-up design)	Low Quality Design (backline-up design)	High Quality Design (frontline-up design)	Low Quality Design (backline-up design)	High Quality Design (frontline-up design)	Low Quality Design (backline-up design)
	3.97	3.26	4.09	0.09	4.11	2.23
Design Attribute Effect	0.71		4.00		1.88	
Difference of Design Attribute Effect	Group B – Group A : 3.29***					
	Group C – Group B : -2.12**					

\*\*\*:  $p < 0.01$ , \*\*:  $p < 0.05$

Table 4.6 The Comparison of Mean Feature Effects of Design Attribute

The subsequent decrease in design attribute effect when evaluation criteria are given in addition to design attribute information is more difficult to explain. However, it is worth noting that the quality prediction of the high quality product continues to improve slightly when evaluation criteria are provided. The decrease in attribute effect is the result of a significant recovery of perceived quality in the low quality product when evaluation criteria are provided, (in contrast to its significant drop between brand condition and brand plus attribute condition). The mechanism behind this is not yet clear; initial thoughts that an increase in

cognitive load to take account of the evaluation criteria causing reversion to depending on the brand are not supported as the brand effect is further diminished by the presence of the evaluation criteria. It appears that facilitating decision making by the provision of information itself improves perceived quality levels. If this is the case, it seems likely that there is a limit to this effect as processing load is increased, and this would be a topic for further investigation.

In addition, the weight difference between the brand and the design attribute in the product-quality evaluation process could influence the result, i.e. the brand effect could be diminished by providing design attributes, but the design attribute effect could not completely offset the brand effect in the product evaluation. It seems that the weight of brand information is bigger than design attribute information in product quality evaluation.

Therefore, a decrease in the brand effect was found in the experiment, but there was no significant increase in the design attribute effect due to the relative importance weight on the brand information and reluctance of processing overloaded information in the product evaluation process. However, the design attribute still could affect product evaluation to a degree in that it reduces the effect of brand in the evaluation process even where brand equity completely did not shift to the predictive design attribute by providing evaluation criteria of design attributes.

Thus, Hypothesis 2 (that providing evaluative criteria would facilitate reducing the effect of brand on product quality evaluation) was only partially supported.

## 4.4 Summary of Step 1

This step investigated the effect of design attributes on the value placed on brand information.

The results support the hypothesis that provision of predictive design attributes can reduce the influence of brand name on product quality evaluation when branding and design information is learned simultaneously. This result provides support for the view of other research related to the significant effect of product design on product evaluation (i.e. Bintner 1992; Donovan and Rossiter 1982; Mehrabian and Russell 1974; Terwiesch, and Ulrich 2007). The design of a product is one of its dominant features, and thus using design attribute information to promote a product can shift the locus of equity from brand to attribute in product evaluation.

Furthermore, the brand effect was reduced by providing evaluation criteria for design attributes in product quality evaluation. This result also supports the supposition that evaluative criteria facilitated reduction of brand equity by shifting the equity from brand to design. Subjects who were given evaluative criteria also placed greater weight on the design attribute during the product evaluation process. In other words, when learning is difficult because of the high ambiguity of design attributes, subjects were reluctant to use design attributes in product evaluation, and in turn they used brand information as a criterion instead of design attribute information.

With these results, it can be concluded that product design attributes have a significant effect on product evaluation.



# CHAPTER 5 EMPIRICAL STUDY 2

## Step 2: Finding the Design Image Dimensions as Consumers' Responses to Product Design

### 5.1 Introduction

In the first step, the significant effect of product design on product evaluation was verified, and the purpose of the 2<sup>nd</sup> step is to examine consumers' psychological responses to product design and develop types of design image.

Consumers' perceptions of design were investigated and several types of design image were found. There are two reasons why we might approach this subject. Firstly, it could provide knowledge about why consumers consider design as an important criterion in their evaluation of products. Secondly, finding consumers' responses to the design of product could be the foundation of a product design theory, and it could provide many managerial implications for companies which want to make consumer oriented design. Furthermore, it is necessary for companies which want to receive feedback about their design from the market to obtain some information about product design images; it could be a good guideline for identifying design image scales. However, consumers' perception of design image may have featured less in past research on consumers' responses to product design because it is quite hard to find generalisable consumer perceptions of product design across product categories. For example, scale items for

measuring the design image of a cell-phone would be different than those that would measure design image in the jeans product category.

Therefore, this step developed a framework of design image dimensions and the different types of design image that can be distinguished. In addition, scales were developed to provide a basis for theory-building for design based on the consumers' perspectives. Perhaps most importantly, this framework and scale should be generalisable across product categories. Therefore, the framework and scale developed in this study were tested across a number of product categories.

## **5.2 Design image Scale Development Procedures**

### **5.2.1 Stimuli Selection**

The mobile phone was selected as an experimental stimulus. Three criteria guided the selection of the product: firstly, it should be a currently important, well-known product group; secondly, that it should be offered in various colours and shapes across the various products in that market and thirdly, it should be a product group in which consumers consider design an important criterion when they make a purchase decision.

It was important for the samples used in the study to capture the diversity of current mobile phone design as there is a wide variety of designs available in this product market. To ensure the representiveness of the sample set, 26 mobile phone designs were selected which were judged by a number of design experts to

be, as far as possible, mutually dissimilar (see Appendix 4). In accordance with the usage of the term 'product design' in this research, materials, proportion, colour, ornamentation, shape, size, and reflectivity were considered as design attributes, and thus such attribute values were criteria in the selection of 26 different mobile phone designs.

The respondents selected for study were 100 undergraduate students (male 59%, mean age = 24.4). The 26 designs were shown to respondents and they were asked to evaluate how representative each sample was of the product group (see Appendix 11). This was taken to be a measure of 'typicality'. Typicality defined in this way has its origins in the work of Rosch (1975, 1978) and has been explored further by others, (e.g., Homa 1984; Langlois and Roggman 1990; Medin and Smith 1984; Reed 1972) and can be considered to be a rating of closeness to some central representations (or 'prototypes') of a category; a kind of average or mode of the attributes of that category. Thus, typicality is a good criterion to select stimuli regarding the representativeness of mobile phone design. To measure typicality, scales in Loken and Ward's study (1990) were adopted. Typicality was scored on an 11-point scale (0 = not at all representative, 10 = highly representative) as the degree to which the design of each specific mobile phone was representative of design in the mobile phone category. An ANOVA using the typicality measures was run. With the results of ANOVA, three mobile phone designs were chosen which were considered to be high, medium and low typicality respectively (see Appendix 5). Results show that there was a significant difference between the three levels of typicality ( $F = 115.763, p < .10$ ; see table

5.1). Subsequently, in this study, 3 types of mobile phone design were used as stimuli (see Appendix 6).

Typicality Level	Mean	F-Value
High	7.150	
Medium	5.100	115.763( $p < .01$ )
Low	2.700	

Table 5.1 Results of ANOVA Test

### 5.3 Study 1: Items Generation

The goal of Study 1 was to find the words which are related to design image. For this purpose, free associations were employed, which generated items in addition to those from relevant literature and in-depth interviews.

#### 5.3.1 Subject

The sample selected for this study was 145 undergraduate students. It was felt that this represented an appropriate purposive sample group as they represent a demographic very familiar with mobile phones and are likely to be influenced by design attributes when they compare products or make a purchase decision. Involvement was measured by the scales which were used in Zaichkowsky's (1985) study. To test the level of involvement and knowledge of respondents, involvement was measured by self-assessment on a seven-point scale (1 = not at all, 7 = a lot) by the degree to which participants think (1) that a mobile phone is one of their essential items, (2) that a mobile phone is useful for them and (3) that they are actively interested in mobile phones. The three items were averaged to

form a product involvement index. In addition, to measure product knowledge, scales used in Park, Mothersbaugh and Feick's study (1994) were adopted. Product knowledge was measured on a seven-point scale (1 = a little, 7 = a lot) as to (1) the degree to which participants thought they knew about mobile phones (2) how much they knew about mobile phones compared to their friends and 3) how much they knew about mobile phones compared to 'experts'. The three scores were averaged and were used as a knowledge index. The mean 'involvement' score and 'knowledge' score were 5.45 and 4.93 respectively.

### **5.3.2 Procedure (Design Image Words Generation)**

In order to generate the initial pool of items for the design image scale, three sources of information were employed; a review of relevant literature and in-depth interviews of individuals believed to have above-average interest in product design. In addition, in order to get more detailed information, a free-association task was conducted. Subjects (58.6% female, mean age = 22, S.D=2.41) were asked to write down the design image words that first came to mind when thinking about their mobile phone designs (see Appendix 10). 191 words were selected using a free association task and literature review.

### **5.3.3 Item Refinement (Known-Group Validation)**

To discard the words which were not related to design image and to remove those which duplicated meanings of others, a group of five Marketing faculty and Ph.D. students at Chonbuk National University in Korea and Brunel University in the

United Kingdom judged each word to consider if it described design image and whether it had a substantially different meaning from the other words collected. Each judge was presented with a written definition of 'design image' for the purpose of this study. Judges were then asked to classify each of the 191 words as a design image word or as a non-design image word, following methods used by Bearden, Netemeyer, and Teel (1989). The words which were judged by four or more judges as non-design image words were eliminated.

This known-groups test provides additional evidence for the design image scale's validity. Therefore, after discussing the suitability of each word as a design image scale with design professionals, 119 words which were either considered unrelated to design image or that they duplicated a particular meaning were discarded. The removal of these non-related and duplicate words left 72 words to be used for further study.

## **5.4 Study 2: Finding Dimensions of Design Image**

The goal of Study 2 was to find dimensions of design image and measurement scales of each design image dimension.

### **5.4.1 Subjects and Procedure**

The sample selected for this study was 472 undergraduate students. They were randomly assigned to one of the three different mobile phone designs which were selected from the primary test, and every participant was informed about the

purpose of the survey and was asked to read some information on the cover page. Subjects were asked to rate the extent to which the 72 words describe design image using a seven-point Likert scale (1=not at all descriptive, 7=extremely descriptive) (see Appendix 12).

#### **5.4.2 Preliminary Analysis**

To combine three kinds of data together, the homogeneity of three groups was tested in several ways. Firstly, the homogeneity of sex: Table 5.2 shows there was no significant gender difference among the three groups of respondents (Chi-Squared= 1.646,  $p > .10$ ).

Secondly, tests were conducted to ensure that there were no difference between groups in product knowledge and involvement of mobile phones. To measure product knowledge and involvement, the three scores on the assessment scales in study 1 were used. Cronbach's Alpha was used to assess the reliability of the product knowledge and involvement scales ( $\alpha=0.889$ ,  $\alpha=0.788$  respectively). In order to test the homogeneity between groups, an ANOVA using the product knowledge and involvement measures was run. Results show that there was no difference among three groups in product knowledge and involvement ( $F = 1.015$ ,  $p > .10$  and  $F = .864$ ,  $p > .10$  respectively; see Table 5.2). In addition, the differences of using period and changing frequency of mobile phones among groups were tested. Results show that there were no differences among three groups in product usage period and frequency of product change ( $F = 1.263$ ,  $p > .10$  and  $F = 1.257$ ,  $p > .10$  respectively; see Table 5.2). Therefore, the

homogeneity among three groups was confirmed, and there was no significant difference among the three groups except with the typicality level of the stimuli which were given to respondents.

		Typicality Level			Total
		High	Medium	Low	
Sex	Male	84	72	83	239
	Female	74	83	76	233
Total		158	155	159	472
Pearson Chi-Square: 1.646( $p>.10$ )					

Group	Involvement		Knowledge	
	Mean	F-Value	Mean	F-value
High	5.5781		3.9451	
Medium	5.6303	.864( $p>.10$ )	3.7856	1.015( $p>.10$ )
Low	5.7438		3.9750	

Group	Periods		Change	
	Mean	F-Value	Mean	F-value
High	68.3544		3.6433	
Medium	65.1184	1.263( $p>.10$ )	3.2792	1.257( $p>.10$ )
Low	69.0692		3.5472	

Table 5.2 The Result of the Homogeneity Test

### 5.4.3 Results of Factor Analysis (Dimensions of Design Image)

Factor-analysis was conducted using principal components analysis and a varimax rotation. Prior to data analysis, the Kaiser-Meyer-Olkin (KMO) test of sampling adequacy and the Bartlett test of sphericity were used to determine the appropriateness of factor analysis (Kaiser 1974). The KMO level of .924 and the



significance of the Bartlett test indicated that factor analysis was appropriate for the data (Kaiser 1974).

The initial 72 items followed the preliminary six-dimensional conceptualization of design image. A six-factor solution resulted on the basis of the following criteria (Aaker 1997):

1. All six factors had eigenvalues greater than one.
2. A significant dip in the scree plot followed the sixth factor (See Figure 5.1).
3. The first six factors were the most meaningful, rich and interpretable.

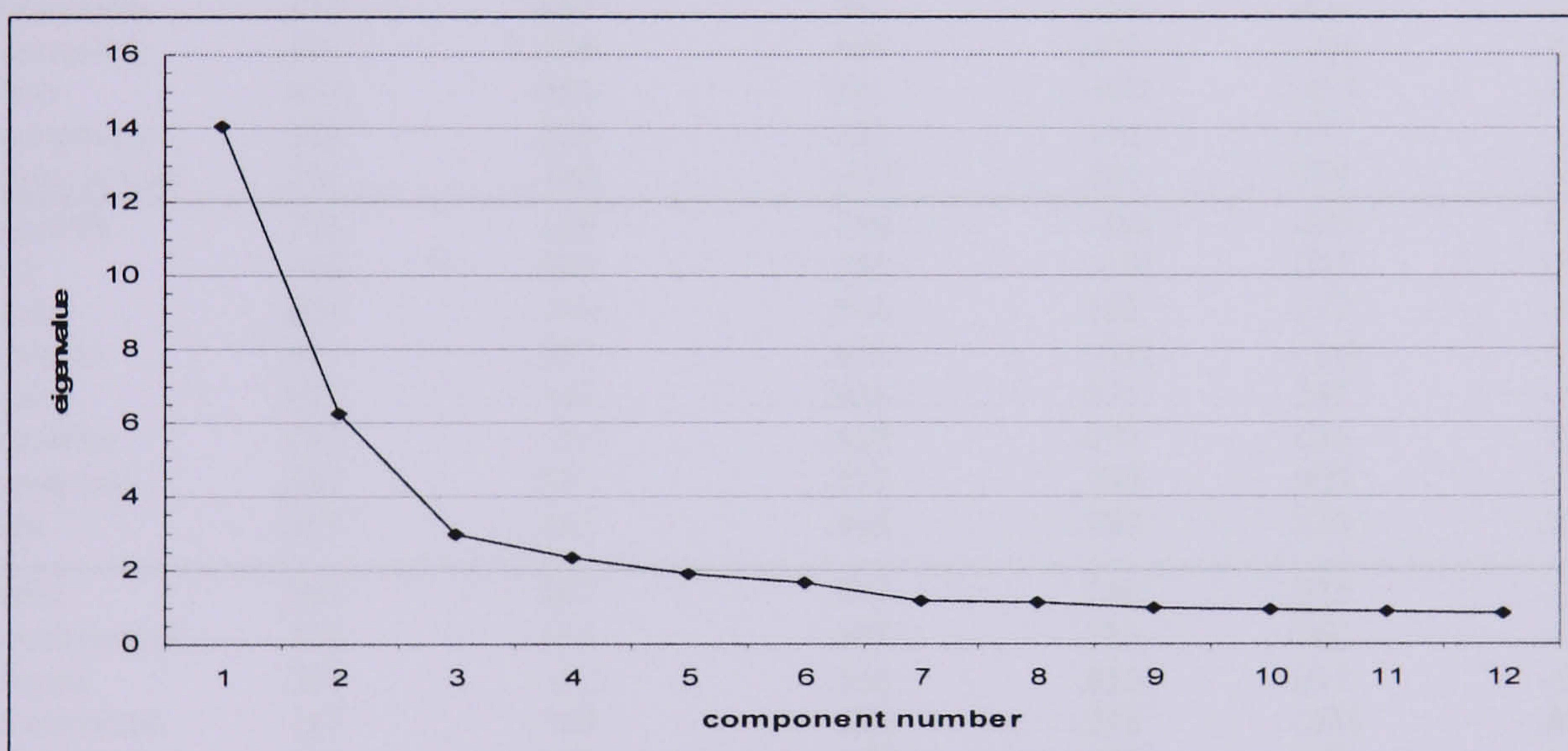


Figure 5.1 Scree Plot

The seventh factor, although it had an eigenvalue above one, was not included because it did not appear to be meaningful or interpretable. The words which did not load highly ( $>.40$ ) on any of the six factors were removed (21 items were removed) and the factor analysis re-run (with 51 items). Each of the design image words had a high loading ( $>.40$ ) on one of the six factors and relatively low loadings on the other five factors. The result was an easily interpretable six-factor

solution with high loadings and communalities for each of the traits. Moreover, the variance explained in each of the factors was relatively high (see Table 5.3).

Items	Factor 1 (aesthetics)	Factor 2 (uniqueness)	Factor 3 (femininity)	Factor 4 (noble)	Factor 5 (utility)	Factor 6 (compactness)
polished	<b>.758</b>	.117	.124	.056	.072	.070
luxurious	<b>.733</b>	.170	.034	.196	.057	-.092
stylish	<b>.727</b>	.221	.271	.124	.101	-.031
tasteful	<b>.702</b>	.229	.135	.226	.144	-.032
dignified	<b>.690</b>	.147	.121	.373	.082	-.012
charming	<b>.679</b>	.141	.188	.223	.314	.039
well-balanced	<b>.665</b>	.086	.231	.178	.279	.057
fabulous	<b>.653</b>	-.092	.376	.102	.264	.079
contemporary	<b>.625</b>	.067	-.052	.050	.183	.256
modernistic	<b>.608</b>	.190	.132	.242	.197	.266
fascinating	<b>.606</b>	.117	.350	.275	.232	.024
urbanized	<b>.522</b>	.194	.028	.432	.131	.247
sensual	<b>.475</b>	.281	.328	.336	.188	.020
cool	<b>.463</b>	.104	.083	.196	.237	.174
innovative	.028	<b>.879</b>	.047	.128	.043	.017
different	-.037	<b>.873</b>	-.042	.083	-.017	-.007
infrequent	-.009	<b>.857</b>	.028	.119	.013	.038
unfamiliar	-.122	<b>.812</b>	-.082	.071	-.069	-.065
uncommon	.032	<b>.795</b>	.052	.012	-.138	.023
exclusive	.251	<b>.733</b>	-.017	-.041	-.092	.016
individualized	.306	<b>.713</b>	.041	-.079	-.067	-.008
rare	.216	<b>.676</b>	.035	.132	.005	-.009
sensational	.133	<b>.667</b>	.097	.258	.027	-.154
contrasting	.401	<b>.594</b>	.190	.021	-.002	.023
fresh	.457	<b>.558</b>	.141	-.042	-.021	-.022
exceptional	.380	<b>.520</b>	.123	.100	.033	-.012
cosmopolitan	.291	<b>.405</b>	-.026	.164	.054	.221
adorable	.193	.128	<b>.788</b>	-.056	.040	.028
tiny	.106	.089	<b>.753</b>	-.084	.073	.057
perky	.006	-.016	<b>.704</b>	.182	.277	-.091
amiable	.317	.057	<b>.673</b>	-.067	-.168	.081
active	.022	.107	<b>.656</b>	.176	.247	-.128
feminine	.163	-.213	<b>.625</b>	.093	.036	.205
emotional	.389	.091	<b>.573</b>	.258	.090	-.002
neat	.397	.082	<b>.448</b>	.348	.236	.120
noble	.367	.087	.177	<b>.736</b>	.075	-.073
sophisticated	.322	.134	.007	<b>.723</b>	.062	.121
elegant	.353	-.015	.358	<b>.615</b>	.011	-.037
westernized	.187	.350	-.006	<b>.575</b>	-.048	.057
delicate	.342	.103	-.020	<b>.455</b>	.231	.014
handy	.187	-.170	-.001	.001	<b>.719</b>	.111
practical	.125	.019	.169	.131	<b>.718</b>	.024
useful	.336	-.040	.145	.029	<b>.677</b>	.006
applicable	.370	.000	.266	.141	<b>.629</b>	.044
inconvenient	-.223	.132	-.018	.027	<b>-.496</b>	.022
simple	-.029	-.060	-.008	-.039	-.119	<b>.753</b>
untangle	.095	.038	.095	.032	.295	<b>.639</b>
uncomplicated	.155	.128	.095	.031	.023	<b>.628</b>
concisely	-.045	-.041	.019	.006	-.030	<b>.611</b>
stable	.130	-.058	.025	.220	.283	<b>.484</b>
complex	-.124	.154	.233	.112	.329	<b>-.446</b>
Variance explained	15.756	14.406	8.915	6.559	6.467	5.183
Eigenvalue	8.035	7.347	4.547	3.345	3.298	2.644

Table 5.3 Six Dimensions of Design Image

The factor names which were determined to best represent the types of concepts subsumed in each of the six dimensions were ‘aesthetics’ (14 items), ‘uniqueness’ (13 items), ‘femininity’ (8 items), ‘nobleness’ (5 items), ‘utility’ (5 items), and ‘compactness’ (6 items).

#### **5.4.4 Reliability Testing**

This stage of the research involved scale refinement and reliability testing for the 51 items. Cronbach’s alpha was calculated for each of the six dimensions using the 51-design image scale. The resulting values were high (Factor 1: 0.939 Factor 2: 0.938 Factor 3: 0.913 Factor 4: 0.830 Factor 5: 0.920 Factor 6: 0.914). In addition, all traits within each of the six dimensions had high correlations (averaging 0.85, all exceeding 0.55) which indicate a high level of internal reliability.

### **5.5 Study 3: Experimental Validation of the Design Image Scale**

As further validation, a study was designed to test if design image types influence consumers’ attitudes. The hypothesis is that design image types could influence consumers’ attitudes, as stated in the following hypothesis:

H1: Design image dimensions (previously extracted factors 1 to 6) influence consumers’ attitudes to the mobile phone design.

Data from Study 2 was also used to gain further insight into the construct validity of the design image scales as well as to allow further examination of them.

Respondents to the survey in Study 2 were asked to indicate the degree of their attitude towards mobile phone design. To measure the attitude to mobile phone design, scales used in other studies were adopted (Faircloth, Capella, and Alford 2001; Muehling 1986). The attitude to design was measured on a seven-point scale (1=a little, 7=a lot) according to the extent to which (1) they liked the design of the mobile phone, (2) they had positive feelings about the design of the mobile phone and (3) how much they had favourable feeling about the design of the mobile phone. The three items were averaged and used as an attitude index (Cronbach' alpha: .607). For validation purposes, indicated attitude to mobile phone design were regressed on the design image scales. Table 5.4 reports the results from a multiple regression of attitude in which the independent variables were the previously extracted design image dimensions 1 to 6.

As Table 5.4 indicates, all design image dimensions correlate with attitude to design significantly. Design dimension 6 (compactness) was the only dimension statistically significant at the .05 level, with the other dimensions being statistically significant at the .01 level. The tolerance scores for each dimension, dimension 1 (1.00), dimension 2 (1.00), dimension 3 (1.00), dimension 4 (1.00), dimension 5(1.00) and dimension 6 (1.00), and the low Variance Inflation Factor scores (1.007, 1.002, and 1.001, 1.001, 1.000, and 1.000 respectively) indicated that multi-colinearity is not an issue, suggesting that the independent variables are contributing separately to the prediction of the dependent variable (see Neter, Wassermann, and Kunter 1989).

The results show that all design image dimensions affect attitude to mobile phone design positively with the exception of dimension 2 (uniqueness). The uniqueness dimension has a negative effect on attitude to design. This result is consistent with research on the relationship between typicality and preference, which has suggested that people respond more favorably to objects that are highly typical and less favorably to objects that are less typical (Barsalou 1985; Carpenter and Nakamoto 1989; Gordon and Holyoak 1983; Langlois and Roggman 1990; Loken and Ward 1990; Martindale and Moore 1988; Martindale, Moore and West 1988; Nedungadi and Hutchinson 1985). In other words, highly prototypical items are perceived as more familiar and therefore are better liked (Gordon and Holyoak 1983; Kunst-Wilson and Zajonc 1980). Thus, Hypothesis 1 is supported, and overall the findings provide preliminary evidence for the nomological validity of the design image scale.

Independent variable	Beta
Results with attitude as dependent variable: <sup>a</sup>	
Design image 1(Aesthetics)	.347(9.813) <sup>b</sup> ***
Design image 2(Uniqueness)	-.275(-7.789)***
Design image 3(Femininity)	.190(5.370) ***
Design image 4(Nobleness)	.151(4.261) ***
Design image 5(Utility)	.409(11.557) ***
Design image 6(Compactness)	.077(2.173) **

Note : <sup>a</sup> Adjusted R<sup>2</sup> : 0.428, F=57.071, p<.001

<sup>b</sup> t-value

\*\* p<.05, \*\*\* p<.01

Table 5.4 The Results of Regression analysis

## **5.6 Study 4: Experimental Validation of the Design Image Scale across Product Categories**

The results of the factor analysis conducted in the factor extraction phase raise a question: To what extent are the six dimensions specific to the particular product category used? To what extent are they applicable to other product types? To answer these questions, an additional phase of research was conducted: the validation of the six dimensions of design image using different product categories.

### **5.6.1 Subjects and Procedure**

The sample selected for study was 322 undergraduate students (male 52.8%, mean age = 22.8, S.D.=2.37). Subjects followed an identical procedure as in the earlier factor refinement phase but with other product categories. Respondents were asked to rate the extent to which the 51 words, which were found in study 2, describe design image using a seven-point Likert scale (1=not at all descriptive, 7=extremely descriptive) (see Appendix 14).

### **5.6.2 Stimuli**

According to previous research on product types, products can be categorized as symbolic or utilitarian. Symbolic products are primarily consumed for sensory gratification and affective purposes (Woods 1960) or for fun and enjoyment (Holbrook 1986). They allow consumers to express their actual or ideal self-image

(Khalil 2000). Thus, symbolic products generate emotional arousal (Mano and Oliver 1993) with benefits that are evaluated primarily on aesthetics, taste, symbolic meaning, and sensory experience (Holbrook and Moore 1981). In contrast, utilitarian products possess a more rational appeal, as they provide more cognitively-oriented benefits (Wood 1960). Less arousing, the tangible attributes that utilitarian products possess are the primary determinants of product value to consumers (Hirschman 1980). To generalize the six design image dimensions developed in this study across various product categories, two products considered to have both symbolic and utilitarian value were selected.

One hundred participants were asked to rate each of the eleven products, which were selected from the Batra and Ahtola's study (1991), on a seven-point disagree/agree item scale. These measured the degree to which the product was i) functional and ii) could be used for self-expressive purposes (see Appendix 13). The results show that mobile phones and cosmetics are both products considered to be utilitarian and symbolic. However, computers, toothpaste, mp3 players, automobiles, pain reliever medication and beverages were perceived as essentially utilitarian products. In contrast, jeans and toiletries were perceived as symbolic products (see Table 5.5). In this research, mp3 players and toiletries are selected as stimuli, because firstly, these products are currently important, well-known product groups to undergraduate students who are respondents of this research and secondly, these products have various colours and shapes across the various products in the market and can be characterized by various design attributes (see Appendix 7).

	Utilitarian mean	Symbolic mean	Mean Difference
Computer	6.44	3.42	3.02***
Toothpaste	4.92	2.59	2.33***
Mp3	5.66	3.60	2.06***
Jeans	3.82	5.44	-1.62***
Cosmetic	5.14	4.96	0.18
Toiletries	3.56	5.13	-1.57***
Automobile	6.24	5.72	0.52***
Shoes	5.47	5.34	0.13
Pain reliever	5.03	2.24	2.79***
Beverage	3.57	2.69	0.88***
Mobile phone	6.07	5.95	0.12

\*\*\*: p<.01

Table 5.5 Test of Product Type

### 5.6.3 Analysis

Because the objective of Study 4 was to determine the extent to which the six dimensions were robust over different product types, a confirmatory factor analysis estimating a six-factor model for 51 traits with two products was conducted (Mp3 and Toiletries). Confirmatory Factor Analysis (CFA) is appropriate in situations where the dimensionality of a set of variables is already known from previous research. The purpose of CFA is not to determine the dimensionality of a set of variables or to find the pattern of the factor loadings but to investigate whether the established dimensionality and factor-loading pattern fits a new sample. Thus, CFA is an appropriate method to validate the six previously identified dimensions across other product categories. In the case of the mp3 players, an initial maximum-likelihood factor analysis, using the 51 items described above, revealed six items with low factor loadings. These items were deleted and similarly four items were deleted due to low factor loadings in the analysis of toiletry products (in total 8 items were removed as two items were



same in both product cases). Further confirmatory factor analyses estimated using the remaining 43 items were run for both products groups. Table 5.6 summarizes the results.

The chi-square residual resulting from the analysis of mp3 players was found to be 1721.55 (d.f.= 845,  $p < .01$ ), yielding the normed fit index (NFI) and comparative fit index (CFI) of .92 each. The result of the analysis of the toiletries product group shows that chi-square is 1978.95 (d.f.= 845,  $p < .01$ ) and NFI and CFI are .92 and .95 respectively. Since Chi-square and GFI value are sensitive to the size of the sample, the complexity of model and degrees of freedom in the case of the big, complex model with high degrees of freedom, a conservative evaluation is highly recommended by more stable values such as CFI and NFI (or TLI) (Bagozzi and Yi 1988; Bearden, Sharma and Teel 1982).

Incremental fit measures close to .95 for NFI and CFI are cited as indication of acceptable fit (Anderson and Gerbing 1988). These statistics indicate a reasonable fit to the data in both products. In addition, the  $t$ -value for each loading estimate is significant ( $p < .01$ ). Each loading estimate exhibits a high level of significance ( $p < 0.01$ ), and each scale displays acceptable reliability. The results provide additional evidence of the scale's convergent validity.

Latent construct	Item	MP3 Factor Loading	Toiletries Factor Loading
<b>Factor 1 (aesthetics)</b>	Polished	.549	.799
	luxurious	.597	.804
	stylish	.730	.846
	tasteful	.778	.905
	dignified	.629	.839
	charming	.751	.845
	well-balanced	.664	.756
	fabulous	.684	.824
	modernistic	.624	.628
	fascinating	.717	.822
	urbanized	.566	.649
	sensual	.590	.786
	cool	.671	.451
	Cronbach's $\alpha$	.914	.904
<b>Factor 2 (uniqueness)</b>	innovative	.832	.856
	different	.849	.805
	infrequent	.802	.816
	unfamiliar	.641	.732
	uncommon	.820	.794
	exclusive	.591	.880
	rare	.742	.736
	sensational	.657	.728
	contrasting	.630	.829
	fresh	.523	.691
	exceptional	.668	.845
		Cronbach's $\alpha$	.892
<b>Factor 3 (femininity)</b>	adorable	.813	.775
	tiny	.814	.668
	perky	.666	.738
	amiable	.701	.730
	emotional	.508	.687
	neat	.521	.773
		Cronbach's $\alpha$	.927
<b>Factor 4 (noble)</b>	noble	.920	.903
	sophisticated	.736	.763
	elegant	.801	.870
	westernized	.441	.729
	delicate	.735	.767
		Cronbach's $\alpha$	.892
<b>Factor 5 (utility)</b>	handy	.683	.580
	practical	.816	.751
	useful	.834	.787
	applicable	.861	.798
		Cronbach's $\alpha$	.897
<b>Factor 6 (compactness)</b>	simple	.609	.752
	untangle	.760	.733
	uncomplicated	.609	.490
	stable	.503	.460
		Cronbach's $\alpha$	.895
<b>Fit Indices</b>		$\chi^2 = 1721.55$ (d.f.= 845, $p < .01$ ) NFI=0.92, CFI=0.92	$\chi^2 = 1978.95$ (d.f.= 845, $p < .01$ ) NFI=0.92, CFI=0.95

Table 5.6 Confirmatory Factor Analysis Results

## 5.7 The Summary of Step 2

Figure 5.2 summarizes the procedure of step 2.

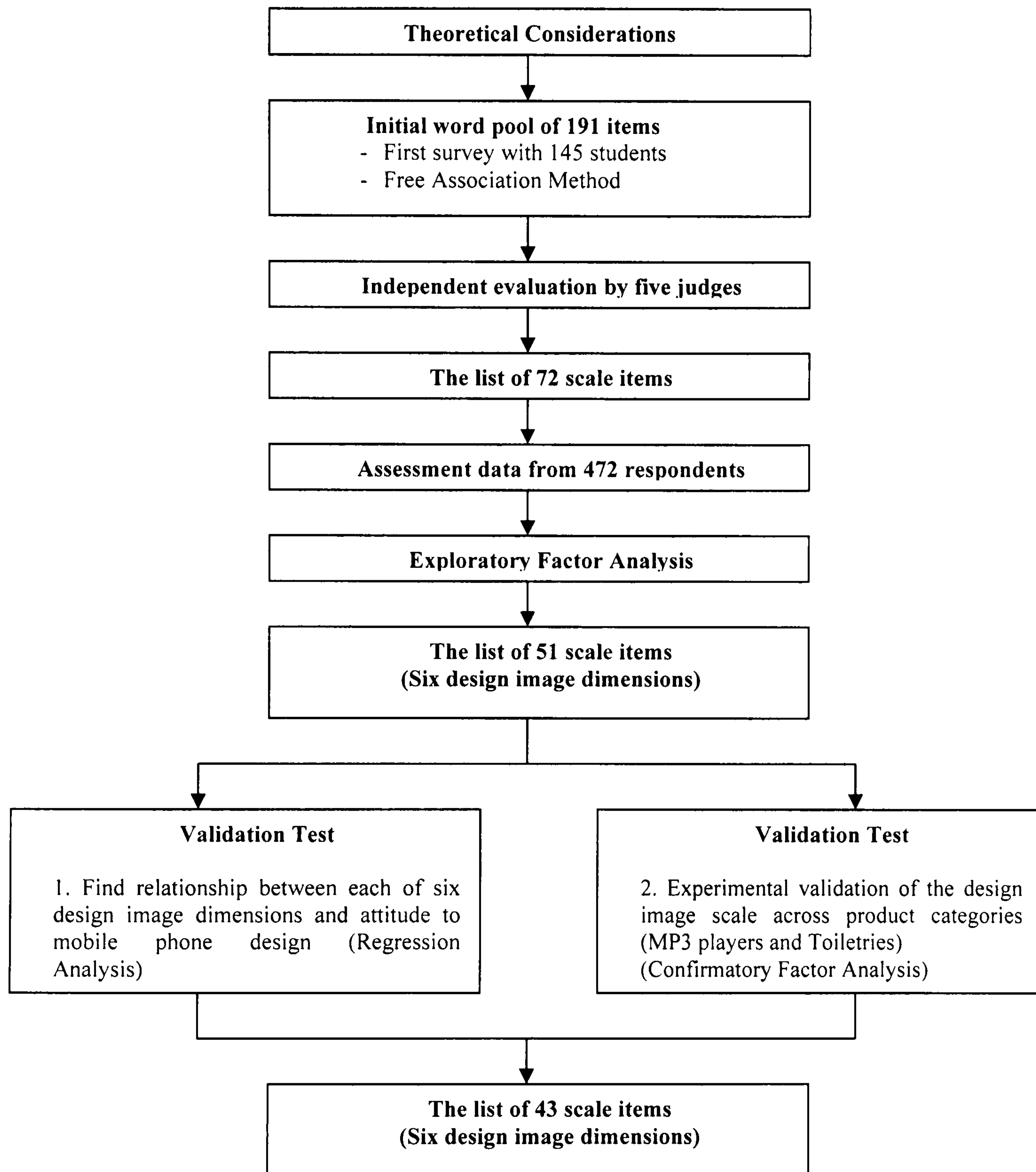


Figure 5.2 Flow Chart of the Scale Development Procedure

The objective of this step was to examine consumers' psychological responses and develop a framework of 'design image' dimensions and a reliable, valid and

generalised scale to measure these dimensions. To identify the design image dimensions, 191 initial words were selected using a free association task and literature review. After discussing the suitability of each word as a design image scale with design professionals, 119 words which were either considered unrelated to design image or that they duplicated a particular meaning were discarded (72 items remained). A total of 472 subjects rated 72 design image items. The results of the exploratory principal components factor analysis suggest that consumers perceive at least six distinct image dimensions: uniqueness, aesthetics, utility, femininity, nobleness and compactness. On the basis of the results of the exploratory principal components factor analysis, the words which did not load highly on any of the six design image factors were removed (21 items were removed and 51 items remaining). Cronbach's alpha suggested a high measure of reliability for the six dimensions. In addition, a correlation between the six dimensions and consumer attitudes to mobile phone design was established. Finally, the results of a confirmatory factor analysis based on 322 subjects across two product categories and 43 design image scales items provides additional evidence for the stability of the six dimensions found. In summary, the results of these analyses show that the framework of design image dimensions, as represented by the 43-item design image scale, is reliable, valid and generalisable.

## CHAPTER 6 EMPIRICAL STUDY 3

### Step 3: Investigating the Effect of Design Image on Brand Image and Brand Equity

#### 6.1 Introduction

The purpose of the 3<sup>rd</sup> step is to examine the relationship among design image, brand image and brand equity and find the differences of design image effect on brand image and equity between utilitarian and symbolic products. Six types of design image which were developed in the 2<sup>nd</sup> study were used to test the relationship among these variables.

The main goal of this step is to investigate the effect of design image on brand image and equity. The effects of two key variables which are the important factors for establishing brand equity were investigated in this step. In addition, the effects of design image on brand image and brand equity between utilitarian and symbolic product were compared. To find the differences of the design image effect on brand image and equity between utilitarian and symbolic products, the relationships among design image, brand image, and brand equity were analyzed in two product categories and compared to each other.

## **6.2 Theoretical Background and Hypotheses**

### **6.2.1 The Influences of Design Image on Brand Image Brand Equity**

Given definitions of brand image, as examined above, brand image is an overall meaning including a product attributes and its subjective associations. Keller (1993) suggested that brand associations can be classified into three major categories which are attributes, benefits and attitudes. According to his research, attributes are those descriptive features that characterize a product or service, and attributes are distinguished according to how directly they relate to product or service performance. With this definition, Keller (1993) divided product attributes into 2 categories: product-related attributes and non-product-related attributes. Product-related attributes are defined as the ingredients necessary for the performance of the product or service function sought by consumers. Non-product-related attributes are defined as external aspects of the product or service that relate to its purchase or consumption and one of the main types of non-product-related attributes is packaging or product appearance information (Keller 1993). According to this research, brand associations can arise as a result of perceptions about a product design. For example, a compact and slim design of a laptop can make consumers associate it to high-tech or convenient brand image in their mind.

This leads to hypothesis 1:

H1: Design image has a positive effect on brand image.

In addition, according to the studies on architectural spaces and retail atmospherics (Bitner 1992; Donovan and Rossiter 1982; Mehrabian and Russell 1974), behavioural responses to design are divided into approach and avoidance. Approach behaviour reflects the attraction for the design and means spending a lot of time in one place or undertaking research on the place according to the studies. When consumers associate favourable things with the product design, approach behaviours increase. In addition, Bloch (1995) presented that when positive psychological response to a specific design takes place, consumers tend to make approach behaviours such as extended viewing, listening or touching of the product. Approach behaviour is a part of aesthetic experiences and means the desire for a deeper exposure to the pleasing design of the product (Csikszentmihalyi and Robinson 1990; Mehrabian and Russell 1974). This approach behaviour also includes a search for the information related to the product (Bloch 1995). However, avoidance behaviour means the results generated by the negative feelings for the product (Bitner 1992; Donovan and Rossiter 1982; Mehrabian and Russell 1974). When the product design causes negative belief or feeling, consumers keep themselves away from the product and the product is difficult for consumers to undertake a comprehensive search for or pursuit of.

To sum up, when a product design elicits positive psychological responses, consumers approach this product more and it could increase the product purchase intentions. In other words, positive psychological responses which are caused by a good product design can enhance consumer loyalty and could in turn bring substantial returns to the firm.

This leads to Hypothesis 2

H2: Design image has a positive effect on brand equity.

### **6.2.2 The Influence of Brand Image on Brand Equity**

According to established studies, the formation of positive brand image is considered to have a positive effect on brand equity (e.g., Aaker 1991). In addition, many marketing researchers have said that brand image is a very vital element for brand equity (e.g., Keller 1993). Krishnan (1996) argued that the brand with a high asset value has a more positive brand image than the brand with a low asset value. In addition, Lassar, Mittal and Sharma (1995) argued that premium prices and high brand values are closely related to the brands with high image ratings. Kwon (1990) found that positive brand image has higher correlations in preferred brands than in non-preferred brands.

In addition, Kapferer(1992) argued that brand image is a part of associative memory network playing a pivotal role of consumers' decision making, has a potential effect on brand evocation or brand evaluation, and finally contributes to brand equity (Holden 1992). In other words, brand association created through the company's marketing mix activities and the product use by consumers contributes to defining brand image by consumers (Keller 1993). Similarly, in the established studies, brand association is considered to create brand image and the brand image is considered to have a partial effect on constituting brand equity. The special, strong and favourable association creates a positive brand image and this brand



image induces the consumers' biased brand activities to enhancing brand equity (Keller 1993). Further, the special, strong and favourable image makes possible the positioning of strategically differentiated brand meaning into the consumers' minds, which contributes to enhancing brand equity (Pitta and Katsanis 1995).

This leads to Hypothesis 3:

H3: Brand image has a positive effect on brand equity.

Figure 6.1 shows the summary of research.

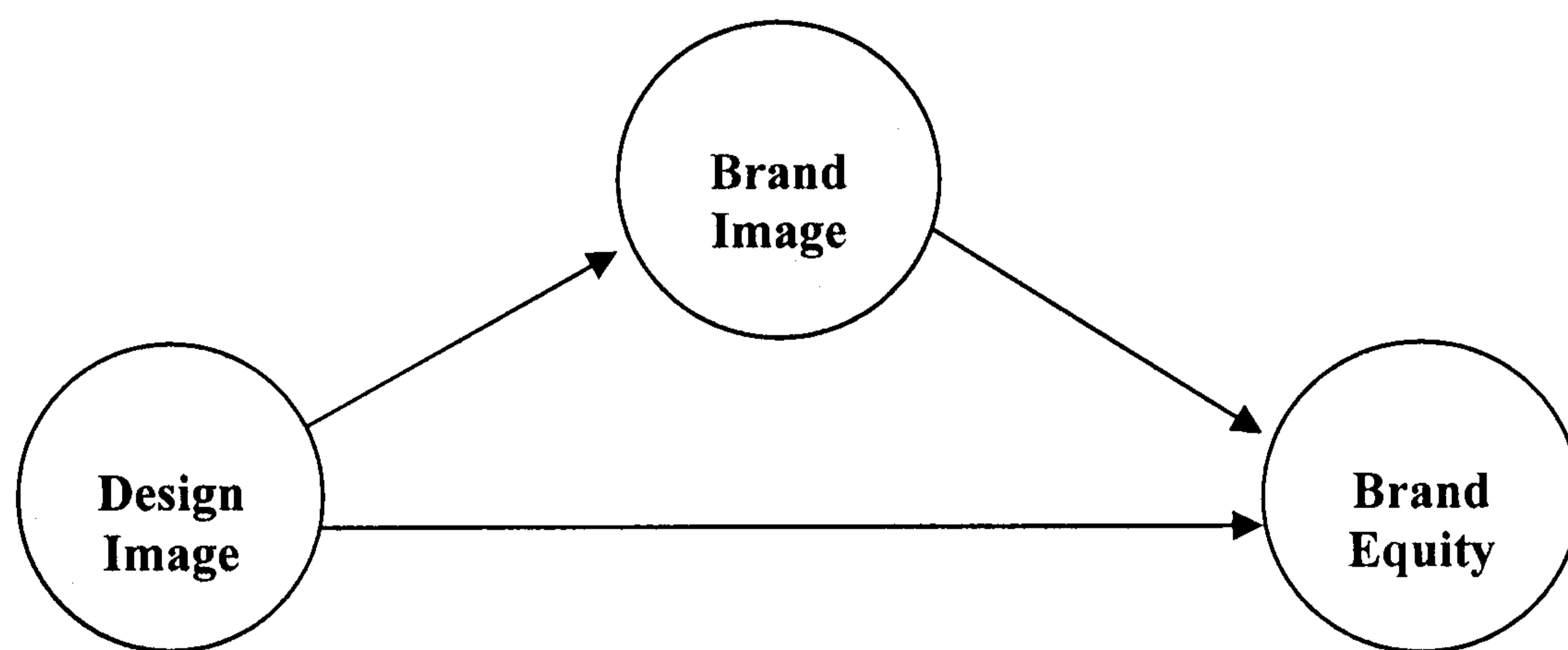


Figure 6.1 The Research Model

## 6.3 Empirical Study

### 6.3.1 Method

#### 6.3.1.1 Stimuli

To test the study model, two products which are symbolic and utilitarian products were selected based on the results of the second step. Mp3 and toiletries were

selected in the utilitarian and symbolic product category because these products have various designs, and consumers could respond to these various design in a variety of ways.

In order to select brands of MP3 player and toiletries, 100 respondents was asked to write down a brand which they can associate with two products (MP3 player and Toiletries). The top 3 brands which were associated with MP3 player product were IRiver (42%), Samsung (20%) and Apple (18%). In addition, Chanel (32%), Calvin Klein (15%) and Polo (11%) were the top 3 brands in toiletries product. Therefore, these brands were used as stimuli. After the selection of brands, a product design was selected in each brand (see Appendix 8). To block the effect of brand on the evaluation of product design and avoid the evaluation with the inference through brands which were given to respondents, brand names and symbols were removed from the slides which were shown to respondents. Respondents have not been exposed to these designs; thus, they could not associate the brand with the design which was given to them.

### **6.3.1.2 Subject and Procedure**

The sample selected for this study was 360 undergraduate students. The reason that undergraduate students were selected was that they are very familiar with MP3 players and toiletries, and they are influenced by design when they compare products or make a purchase decision. 56.1% of the respondents were male and 43.9% were female, and the mean age was 22.22 (S.D.=2.27) in MP3 player group. In toiletries product group, 41.7% of the respondents were male, 58.3% were female and the mean age was 22.50 (S.D.=1.88).

They were randomly assigned to one of the six different product designs (three designs of each product category) which were selected from the primary test and every participant was informed about the purpose of the survey and was asked to read some information on the cover page.

### **6.3.1.3 Measures**

All of the scales necessary to measure the constructs in the proposed conceptual model—brand image, design image, design equity, brand equity—were taken directly from existing literature as follows:

**1) Brand Image:** As previously suggested in the literature review, brand image has been conceptualized and operationalized in a number of ways. Most of the brand image scales come from retail image or self-concept/brand image/store image congruence studies (e.g. Birdwell 1968; Sirgy 1985). Unfortunately, many of the scales utilized in these studies are specific to a particular product or store attributes and do not generalize to other categories. In other cases, such as that employed by Roth (1995), brand image was operationalized as a firm's self reported brand image — functional, social or sensory. The functional brand image was measured on a seven-point scale (1=a little, 7=a lot) according to the degree to which (1) a brand has the image that the brand solves the problems which I have, (2) a brand has the image that the solves the problems which can be happen in the future or (3) a brand has the image that the brand provides functional benefits. The social brand image was measured on a seven-point scale (1=a little, 7=a lot) according to the degree to which (1) a brand has the image that the brand

can convey my status to other people, (2) a brand has the image that the brand gets social approval or (3) a brand has the image that the brand gets accreditation from other people. Finally, the sensory brand image was measured on a seven-point scale (1=a little, 7=a lot) according to the degree to which (1) a brand has the image that the brand provides variety, (2) a brand has the image that the brand provides stimulation or (3) a brand has the image that the brand provides sensory gratification (see Appendix 15).

**2) Design Image:** The design image scale used in this study was the scale which was developed in the second step. In the second step, 6 dimensions (aesthetics, uniqueness, femininity, nobleness, utility and compactness) of design image which have 43 design image scales were developed using three kinds of products (mobile phones, toiletries and MP3 players). Using these 43 scales, respondents were asked to rate the extent to which the 43 words describe design image using a seven-point Likert scale (1=not at all descriptive, 7=extremely descriptive) (see Appendix 15).

**3) Brand Equity:** Brand equity is represented mainly with the multidimensional biased or enhanced choice behaviour and the willingness of the consumer to pay premium prices (e.g., Aaker 1992; Keller 1993). To measure the multidimensional properties of brand equity, two measures were used in this study. Firstly, purchase intention that is a general measure for the enhanced choice behaviour was measured. The scale used in the research of MacKenzie, Lutz, and Belch (1986) was adapted to measure purchase intention. Purchase intention was measured in MacKenzie, Lutz, and Belch (1986) in a seven point three item (likely/unlikely,

probable/improbable, and possible/impossible) semantic differential scale. In this research, purchase intention was measured with a seven point single item scale using the likely/unlikely measure. Secondly, a general measure of the premium a consumer is willing to pay for a particular brand is based upon a comparison to another brand and was used by Park and Srinivasan (1994). This scale was adapted for this research into a seven point single item semantic differential measure — willingness to pay a premium price (very likely/very unlikely). Thus, brand equity was measured by the two items of purchase intention and willingness to pay a premium price for the brand (see Appendix 15).

Figure 6.2 show the summary of measurement model.

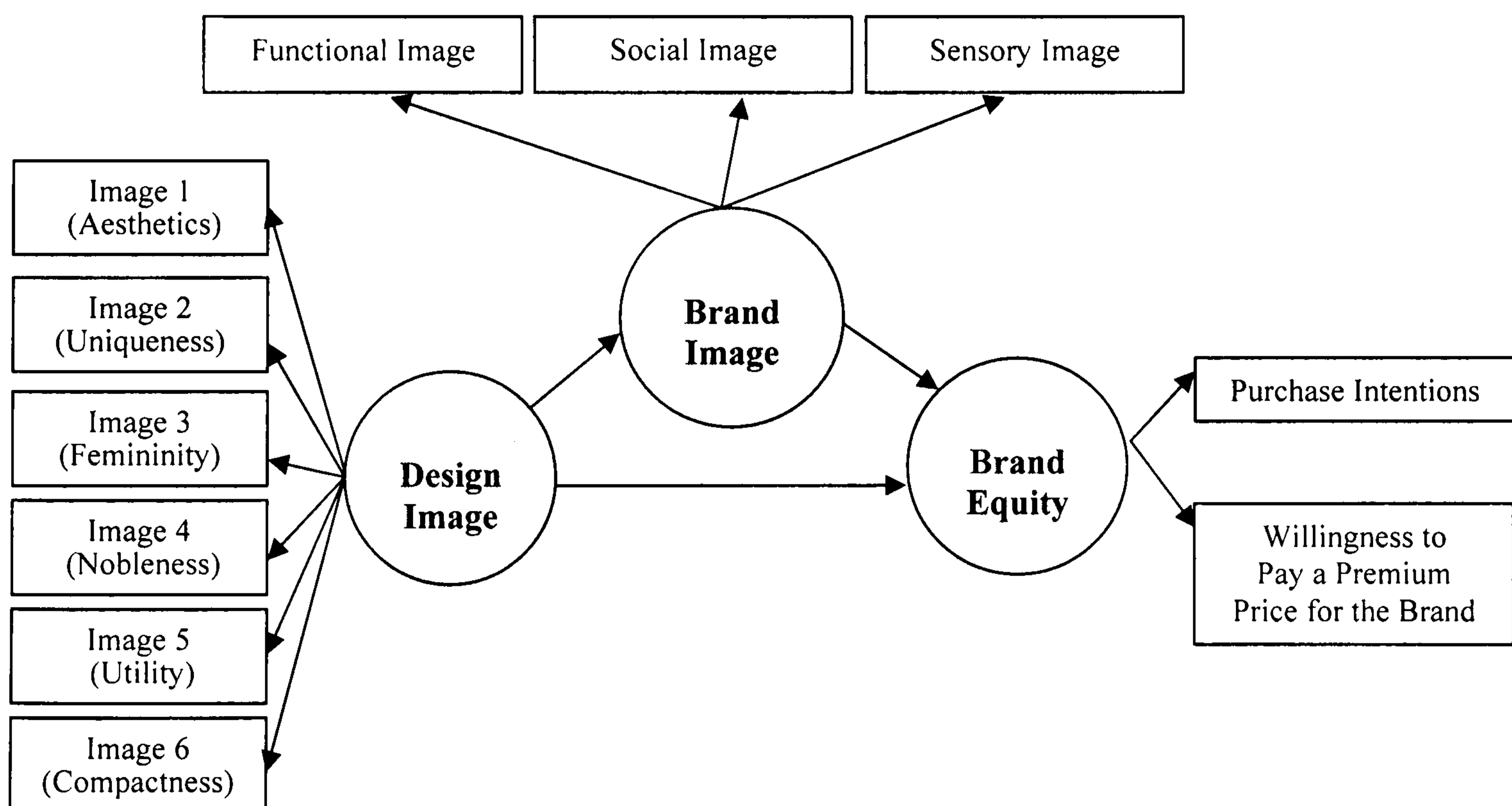


Figure 6.2 The Measurement Model

## 6.3.2 Preliminary Analysis

### 6.3.2.1 The Homogeneity Test

To combine three kinds of data together, the homogeneity of three groups was tested in several ways. The researchers tested whether there was no difference among groups in product knowledge and involvement of mp3 players and toiletries. Involvement was measured on a seven-point scale (1 = not at all, 7 = a lot) by the degree to which participants think 1) the product is one of their necessary items, 2) the product is useful for them or 3) they are usually interested in the product (Zaichkowsky and Judith L. 1985). The three items were averaged to form a product involvement index. In addition, to measure product knowledge, scales used in Park, Mothersbaugh and Feick's study (1994) were adapted. Product knowledge was measured on seven-point scale (1 = a little, 7 = a lot) by the degree to which participants think how much they know the product 2) how much they know the product compared to your friends and 3) how much they know about the product compared to experts of the product. The three items were averaged and used as a knowledge index. Cronbach's alpha was used to assess reliability of product knowledge and involvement. All of Cronbach's alpha values of these variables were more than 0.8, and the result indicates that the measured items are reliable (see Table 6.1; Nunnally 1967). In order to test the homogeneity among groups, an ANOVA using the product knowledge and involvement measures was run. Results show that there was no difference among groups in product knowledge and involvement in mp3 players ( $F = .065, p > .10$  and  $F = .655, p > .10$  respectively; see Table 6.2) and toiletries ( $F = .925, p > .10$  and  $F$

= .947,  $p > .10$  respectively; see Table 6.2). Therefore, the homogeneity among three groups was confirmed, and there was no significant difference among the three groups. With these results, three kinds of data were combined into a data set in each product category.

### 6.3.2.2 Manipulation Check

A validity test was needed to confirm that the experiment stimuli (toiletries and mp3 players) are well identified with utilitarian and symbolic product respectively. The paired samples t-test was run to verify the difference of the mean values of functional and symbolic value. The results showed the means of utilitarian value are 5.04 (mp3 players) and 3.16 (toiletries), and the means of symbolic value were 3.32 (mp3 players) and 5.53 (toiletries). There was a significant difference in functional and symbolic value in two products (see Table 6.3). Therefore, it is verified that the mp3 product has utilitarian attributes and the toiletries product has symbolic attributes.

	Construct	Measurement items	Cronbach's Alpha
MP3 Player	Knowledge	How much do you know about MP3 Players How much do you know about MP3 Players compared to your friends How much do you know about Mp3 Players compared to experts	.872
	Involvement	Mp3 Players are one of my necessary items Mp3 Players are useful for me I am usually interested in Mp3 Players	.805
Toiletries	Knowledge	How much do you know about toiletries How much do you know about toiletries compared to your friends How much do you know about toiletries compared to experts	.919
	Involvement	Toiletries is one of my necessary items Toiletries is useful for me I am usually interested in toiletries	.943

Table 6.1 Reliability Test Results

MP3	Group	Involvement		Knowledge	
		Mean	F-Value	Mean	F-value
	A	5.7005	0.581( $p>.10$ )	3.7874	1.312( $p>.10$ )
	B	5.7000		4.0381	
	C	5.8762		3.7286	

Toiletries	Group	Involvement		Knowledge	
		Mean	F-Value	Mean	F-value
	A	3.4944	0.925( $p>.10$ )	2.6056	0.947( $p>.10$ )
	B	3.5222		2.6389	
	C	3.8889		2.9389	

Table 6.2 The Result of the Homogeneity Test  
(Product Knowledge and Involvement)

Value	MP3 player			Toiletries		
	Mean	Difference	T-value	Mean	Difference	T-value
Utilitarian value	5.0444	1.7166	10.770 <sup>***</sup>	3.1667	2.3667	-15.174 <sup>***</sup>
Symbolic Value	3.3278			5.5333		

\*\*\*:  $p<.01$

Table 6.3 The Result of the Manipulation Test

### 6.3.3 Test the Dimensions of Design Image and Brand Image

#### 6.3.3.1 Convergent Validity Test through CFA

Confirmatory Factor Analysis (CFA) is appropriate in situations where the dimensionality of a set of variables is already known from previous research. The purpose of CFA is not to determine the dimensionality of a set of variables or to find the pattern of the factor loadings but to investigate whether the established dimensionality and factor-loading pattern fits a new sample. Thus, CFA is an



appropriate method to validate the six identified dimensions of design image and three dimensions of brand image across product categories. With CFA using a covariance matrix, this research analyzes the appropriateness of the model. Tables 6.4 and 6.5 summarize the results.

Since Chi-square and GFI value are sensitive to the size of the sample, the complexity of model and degree of freedom, in the case of the big, complex model with high degrees of freedom, a conservative evaluation is highly recommended by using more stable values such as the normed fit index (NFI) and comparative fit index (CFI) (Bagozzi and Yi 1988; Bearden, Sharma and Teel 1982).

In the case of the convergent validity test for the brand image measure, the chi-square residual resulting from the analysis of mp3 players was found to be 82.68 (d.f.= 24,  $p < .01$ ), yielding NFI and CFI of .96 and .97 respectively.

The result of the analysis of the toiletries product group shows that chi-square is 38.75 (d.f.= 24,  $p < .01$ ) and NFI and CFI are .97 and .98 respectively. These statistics indicate a reasonable fit to the data (Carmines and McIver 1981) in both products. In addition, each loading estimate exhibits a high level of significance ( $p < 0.01$ ), and each scale displays acceptable reliability (see table 6.4).

Latent construct	Item	MP3 Factor Loading	Toiletries Factor Loading
Brand Image 1 (Functional)	solve current problems	.877	.904
	solve future problems	.919	.935
	provide functional benefits	.776	.701
	Cronbach's $\alpha$	.884	.881
Brand Image 2 (Social)	convey my status	.732	.847
	get social approval	.911	.983
	get accreditation	.928	.821
	Cronbach's $\alpha$	.888	.908
Brand Image 3 (Sensory)	provide variety	.698	.743
	provide stimulation	.847	.917
	provide sensory gratification	.729	.831
	Cronbach's $\alpha$	.791	.866
Fit Indices		$\chi^2 = 82.68$ (d.f.= 24, $p < .01$ ) NFI=0.96, CFI=0.97	$\chi^2 = 38.75$ (d.f.= 24, $p < .01$ ) NFI=0.97, CFI=0.98

Table 6.4 Confirmatory Factor Analysis Results (Brand Image)

On the other hand, the results of the test of CFA of design image measure shows that chi-square is 2339.18 (d.f.= 845,  $p < .01$ ) and NFI and CFI are .94 each in the mp3 product group and chi-square is 2128.72 (d.f.= 845,  $p < .01$ ) and NFI and CFI are .93 and .96 respectively in the toiletries product group (see table 6.4). In addition, the  $t$ -value for each loading estimate is significant ( $p < .01$ ). The results provide the evidence of the design image scale's convergent validity (Anderson and Gerbing 1988).

Cronbach's alpha was used to assess reliability of each dimension of design image and brand image. All of Cronbach's alpha values of these variables were more than 0.7, and the result indicates that the measured items are reliable (see table 6.4 and 6.5; Nunnally 1967). All items of each dimension were averaged and used as six design images and three brand images index.

Latent construct	Item	MP3 Player	Toiletries	
		Factor Loading	Factor Loading	
Design Image 1 (aesthetics)	polished	.743	.821	
	stylish	.794	.826	
	fabulous	.800	.841	
	luxurious	.835	.829	
	cool	.484	.553	
	dignified	.794	.860	
	tasteful	.883	.906	
	well-balanced	.837	.801	
	modernistic	.725	.726	
	charming	.803	.846	
	fascinating	.786	.833	
	urbanized	.618	.574	
	sensual	.741	.797	
Cronbach's $\alpha$		.946	.955	
Design Image 2 (uniqueness)	fresh	.677	.775	
	exclusive	.722	.828	
	contrasting	.728	.837	
	exceptional	.718	.880	
	uncommon	.774	.753	
	rare	.810	.761	
	different	.680	.753	
	unfamiliar	.745	.638	
	innovative	.841	.817	
	infrequent	.901	.793	
	sensational	.632	.683	
	Cronbach's $\alpha$		.933	.935
	Design Image 3 (femininity)	amiable	.685	.779
perky		.748	.818	
adorable		.824	.821	
emotional		.741	.846	
tiny		.741	.792	
neat		.584	.678	
Cronbach's $\alpha$		.864	.822	
Design Image 4 (nobleness)	westernized	.661	.778	
	sophisticated	.735	.769	
	noble	.888	.908	
	elegant	.739	.812	
	delicate	.746	.787	
	Cronbach's $\alpha$		.863	.871
Design Image 5 (utility)	handy	.642	.765	
	practical	.748	.790	
	useful	.746	.711	
	applicable	.829	.862	
	Cronbach's $\alpha$		.825	.842
Design Image 6 (compactness)	stable	.558	.766	
	simple	.702	.833	
	untangle	.692	.670	
	uncomplicated	.610	.564	
	Cronbach's $\alpha$		.723	.692
Fit Indices		$\chi^2 = 2339.18$ (d.f.= 845, p<.01) NFI=0.94, CFI=0.94	$\chi^2 = 2128.72$ (d.f.= 845, p<.01) NFI=0.93, CFI=0.96	

Table 6.5 Confirmatory Factor Analysis Results (Design Image)

### 6.3.3.2 Assessing the Measurement Model

#### 1) Factor Analysis

The factor analysis was run to verify that the dimensions are suitably separated according to each step of the research model and the measurement items are properly grouped. Factor analysis has been performed to confirm that all of the measured items are individually grouped according to the research model dimension. As Table 6.6 and 6.7 shows, factors are divided into 3 dimensions such as design image, brand image and brand equity - the same as in the research model. The accumulated variance explained by the 3 factors was 75.452% and 73.114 respectively in both product categories.

Items	Factor 1 (Design Image)	Factor 2 (Brand Image)	Factor 3 (Brand Equity)
Nobleness	<b>.901</b>	.001	.188
Aesthetics	<b>.888</b>	.009	.156
Uniqueness	<b>.875</b>	.068	.089
Femininity	<b>.861</b>	.125	.058
Utility	<b>.858</b>	.264	.027
Compactness	<b>.759</b>	.110	.247
Symbolic image	.138	<b>.824</b>	.229
Utilitarian Image	.148	<b>.777</b>	.351
Experiential Image	.190	<b>.745</b>	.051
Purchase Intention	.085	.058	<b>.869</b>
Pay a Premium	.247	.400	<b>.543</b>
Variance explained	34.878	25.753	14.821
Eigenvalue	4.481	2.483	1.336

Table 6.6 Results of Factor Analysis (MP3)

Items	Factor 1 (Design Image)	Factor 2 (Brand Image)	Factor 3 (Brand Equity)
Aesthetics	<b>.903</b>	.135	.214
Nobleness	<b>.898</b>	.058	.154
Uniqueness	<b>.880</b>	.116	.086
Femininity	<b>.875</b>	.137	.154
Utility	<b>.874</b>	.016	.016
Compactness	<b>.848</b>	.041	.008
Symbolic image	.289	<b>.722</b>	.115
Utilitarian Image	.155	<b>.671</b>	.101
Experiential Image	.033	<b>.671</b>	.320
Purchase Intention	.029	.007	<b>.917</b>
Pay a Premium	.233	.125	<b>.800</b>
Variance explained	37.537	21.377	14.200
Eigenvalue	4.129	2.351	1.562

Table 6.7 Results of Factor Analysis (Toiletries)

## 2) The Reliability Test

Reliability can be assessed by Cronbach's alpha test. The rule of thumb given for acceptable reliability is .60 (Nunnally 1967). All of Cronbach's alpha values of these variables were more than 0.7 in both product groups, and the result indicates that the measured items are reliable (see Table 6.8)

Cronbach's alpha	Items	MP3	Toiletries
Design Image	Design Image 1	.764	.813
	Design Image 2		
	Design Image 3		
	Design Image 4		
	Design Image 5		
	Design Image 6		
Brand Image	Brand Image 1	.864	.724
	Brand Image 2		
	Brand Image 3		
Brand Equity	Purchase Intention	.964	.927
	Pay a Premium		

Table 6.8 Results of Reliability Test

### 3) Discriminant Validity Test

In addition to the acceptable construct reliability indicated by the above cited results, construct validity requires that discriminant validity be achieved. Discriminant validity can be determined by several measures. One measure for discriminant validity is suggested by Bagozzi (1980). Discriminant validity is achieved when the phi correlations between the constructs are less than one. Since all phis are less than one in both product groups, discriminant validity is supported in both product groups. Another method suggested by Anderson and Gerbing (1988) is to examine the confidence interval around each phi correlation (phi correlation plus or minus 2 standard errors). If the confidence interval does not include the value one, then discriminant validity is supported. Since none of the confidence intervals of phi correlation include the value one, discriminant validity is supported (see table 6.9 and 6.10).

	Design Image	Brand Equity	Brand Image
Design Image	1.000		
Brand Equity	.207 (.077)	1.000	
Brand Image	.299 (.077)	.831 (.030)	1.000

Table 6.9 PHI Matrix (MP3 Player)

	Design Image	Brand Equity	Brand Image
Design Image	1.000		
Brand Equity	.175 (.077)	1.000	
Brand Image	.403 (.076)	.714 (.052)	1.000

Table 6.10 PHI Matrix (Toiletries)

#### 4) The Parameter Estimates between the Latent Construct and Its Observed Variables

To assess the measurement model, the parameter estimates (loadings or  $\lambda$ S) between the latent construct, and its observed variables were measured. All variables (see Table 6.11 and 6.12) had t-values greater than +/-1.96 at a .05 level of significance, suggesting that the variables and latent constructs are closely related in both product groups.

Construct	Estimate	t-value	P-value
Design Image( $\xi_1$ ):			
$\lambda_{11}$	1.06	14.95	<.01
$\lambda_{21}$	.62	7.37	<.01
$\lambda_{31}$	.71	8.94	<.01
$\lambda_{41}$	.94	12.98	<.01
$\lambda_{51}$	.55	7.49	<.01
$\lambda_{61}$	.18	2.14	<.01
Brand Equity( $\eta_1$ ):			
$\lambda_{11}$	1.46	24.25	<.01
$\lambda_{21}$	1.57	16.77	<.01
Brand Image( $\eta_2$ ):			
$\lambda_{12}$	1.21	14.05	<.01
$\lambda_{22}$	1.27	14.61	<.01
$\lambda_{32}$	.96	11.51	<.01

Table 6.11 The Parameter Estimates Between the Latent and Observed Variables (MP3 Players)

Construct	Estimate	t-value	P-value
Design Image( $\xi_1$ ):			
$\lambda_{11}$	1.20	16.88	<.01
$\lambda_{21}$	.77	11.70	<.01
$\lambda_{31}$	1.04	13.13	<.01
$\lambda_{41}$	1.12	13.87	<.01
$\lambda_{51}$	.39	4.59	<.01
$\lambda_{61}$	.16	1.99	<.01
Brand Equity( $\eta_1$ ):			
$\lambda_{11}$	1.54	19.30	<.01
$\lambda_{21}$	1.36	17.39	<.01
Brand Image( $\eta_2$ ):			
$\lambda_{12}$	.85	7.22	<.01
$\lambda_{22}$	.75	6.72	<.01
$\lambda_{32}$	1.08	8.28	<.01

Table 6.12 The Parameter Estimates Between the Latent and Observed Variables (Toiletries)

### 6.3.4 Testing Hypotheses

Hypotheses 1 through 3 are tested using the structural equation model with an examination of the structural coefficients. The structural model results are summarized in Table 6.13

Path	MP3		Toiletries	
	Coefficient (t-value)	P-value	Coefficient (t-value)	P-value
Design Image → Brand Image (H1)	.29(3.56)	P<.01	.40 (4.39)	P<.01
Design Image → Brand Equity (H2)	n.s.	P>.10	.14(1.83)	P<.10
Brand Image → Brand Equity (H3)	.84(12.19)	P<.01	.77 (7.18)	P<.01

Note: n.s.; non-significant, ( ); t-value

Table 6.13 Results of the Structural Model

This model appears to have achieved a satisfactory level of nomological validity. The coefficients (see Table 6.13) are significant (except for the path between design image and brand equity in the mp3 group) and generally support the theory represented in the model. Predictive validity for the model is supported because the parameter estimates are a priori significant and in the magnitudes expected (except in one path).

The Lisrel output furnishes a number of measures which allow assessment of the absolute and incremental fit of the proposed model. In the model, a chi-square of 101.47 (df=39, p<.01) and 84.12 (df=39, p<.01) were observed in the mp3 and toiletries group respectively. Goodness of fit (GFI) indices .91 (MP3) and .92 (toiletries) were calculated. Values greater than .90 are normally accepted as evidence of acceptable model fit (Bargozzi and Yi 1988). A Root Mean Square Residual (RMR) value of less than .08 is offered by Hu and Bentler (1999) as



evidence of acceptable overall model fit. RMR of .11 and .058 were observed for the MP3 player and Toiletries group respectively. The model of mp3 group is somewhat outside of the acceptance range. Lisrel also provides several incremental fit measures of goodness of fit. Incremental fit measures close to .95 for NFI (Normed Fit Index) and CFI (Comparative Fit Index) are cited as indication of acceptable fit (Hu and Bentler 1999). NFI indices .94 were calculated in both groups and CFI indices .96 (mp3 player) and .97 (toiletries) were observed respectively, suggesting an acceptable fit. Based on this evidence, it seems reasonable to conclude that the model has achieved an acceptable goodness of fit in both the mp3 and toiletries groups.

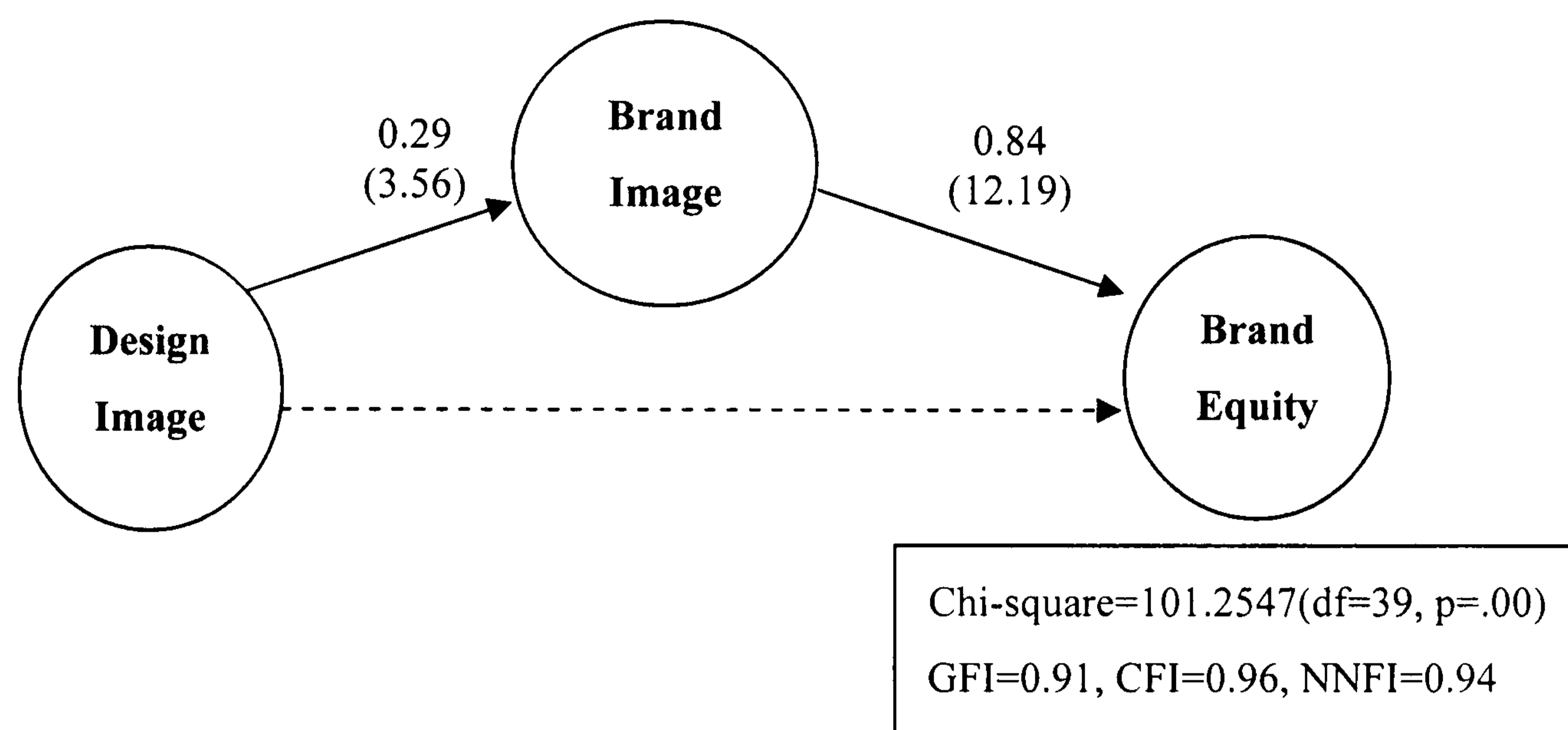
**The Effect of Design Image on Brand Image (H1):** It was proposed that brand attitude would have a positive direct effect on brand equity in H1. This relationship has a parameter estimate of .40 and a t-value of 4.39 ( $p < .01$ ) in the toiletries product group. In addition, the positive influence of design image on brand image is significant at the .01 in MP3 player group (t-value 3.56,  $p < .01$ ). Therefore, there was a significant effect between design image and brand image, and H1 is supported.

**The Effect of Design Image on Brand Equity (H2):** It was proposed that design image would have a significant positive effect on brand equity. This relationship has a parameter estimate of .14 and a t-value of 1.83 ( $p < .10$ ), which indicates the marginal influence of design image on brand equity in the toiletries product group. However, the positive influence of design image on brand image is not significant at the .10 in the mp3 player product group. Thus, H2 is partially supported.

**The Effect of Brand Image on Brand Equity (H3):** It is proposed that brand image would have a significant positive effect on brand equity in H1. The measured coefficient is .84 and .77 respectively in both product categories, ( $p < .01$ ), strongly suggesting the positive influence of brand image on brand equity. Thus, H3 is supported.

Figure 6.3 shows the summary of results

MP3 player



Toiletries

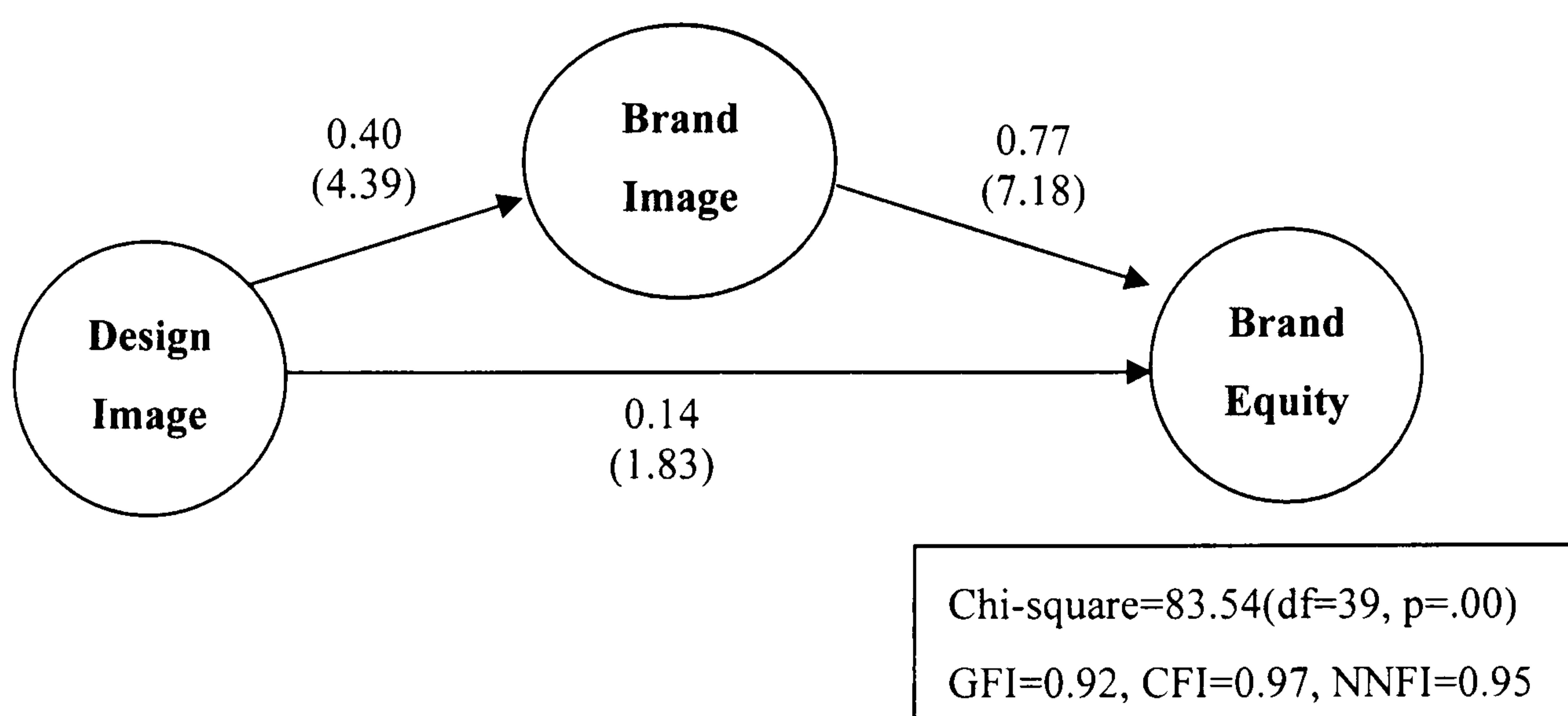


Figure 6.3 The Summary of Results

In terms of comparison of the effect of design image on brand equity between utilitarian and symbolic product, the results show that the effects of design image on brand equity are different between the two product groups. In the utilitarian product (mp3 player), design image has a strong effect on brand image but does not have a significant effect on brand equity. On the other hand, design image has effects on brand image and brand equity in the symbolic product (toiletries). In other words, design image directly influences brand image and brand equity in the symbolic product. Design image, however, has an indirect effect on brand equity through brand image in the utilitarian product.

#### **6.4 Summary of the Step 3**

The research investigated the effect of design image which is formed by consumers' responses toward product design on brand image and equity in utilitarian and symbolic products.

The results support the hypothesis that brand image influences brand equity in both products. This result provides support for the view of past research which is related to the relationship between brand image and brand equity (i.e. Keller 1993). Favourable brand association can form positive brand image and it can build up brand equity.

The results also support the hypothesis that design image has a strong effect on brand image in both products. Design image influences brand equity in the symbolic product; however, there was no significant effect of design image on

brand equity in the utilitarian product. In addition, the research found that brand image has a strong effect on brand equity which is consistent with past research (Aaker 1991; Kapferer 1992; Keller 1993).

The interesting finding is that there were different effects of design image on brand equity between utilitarian and symbolic products. Design image has a direct effect on brand equity in the symbolic product; however, it only has an indirect effect on brand equity through brand image in the utilitarian product. As past research suggested, design is one of the attributes of product and one of the sub-dimensions that can elicit brand image which influences brand equity. This research shows that, in the utilitarian product, design image influences brand image and, in turn brand image affects brand equity. In other words, design of a utilitarian product forms brand image, and this brand image influences brand equity. For example, when a consumer is exposed to a product design of toothpaste, he or she associates the design with the brand of toothpaste and forms brand image (e.g. the design which is easy to squeeze) and, in turn, remembers the design as one of attributes of the brand. Thus, when the consumer makes a purchase decision, he or she is reminded of the brand image which includes design image as a criterion for brand evaluation.

However, the results of this research support the idea that design image can be considered as an independent construct which influences brand equity in symbolic products because the direct effect of design image on brand equity was found. In other words, design image can influence brand equity more directly in symbolic products than in utilitarian products. For example, preventing tooth-decay and

mouth odour could be more important criteria to evaluate toothpaste product than other attributes. However, when consumers evaluate jeans with which consumer can express their personal images, the importance of design could be increased, and the design image itself affects the buying intention of a product regardless of brand. Therefore, design image can be an independent construct which builds up strong brand equity.

## CHAPTER 7 CONCLUSION

This research investigated the role of product design for establishing brand equity. For the purpose of this research, three studies were conducted. In the first step, the effect of design attributes on consumers' product evaluation was investigated. The results show that when the design attribute is provided to consumers, they use this information as an important criterion to evaluate product quality. It means that by shifting consumers' attention from brand information to design attribute information, the effect of design attribute is increased and the effect of brand is decreased relatively on product evaluation. Moreover, providing the criteria for evaluation of the design attribute enhanced the effect of design attribute on product evaluation. Consumers can pay attention to the design attribute more because consumers process the design attribute information easily by providing the criteria for evaluation of it.

In the second step, consumers' psychological responses to product design were examined and a framework of design image dimensions was established, and its generalisable 43-item design image scale was developed. Design image is composed of six image dimensions which are uniqueness, aesthetics, utility, femininity, nobleness and compactness.

In the third step, the relationships among design image, brand image and brand equity were investigated, and the effects of design image on brand image and equity were compared between utilitarian and symbolic products. Design image

has significant effects on brand image and equity in both products, and design image has a direct effect on brand equity in the symbolic product.

Based on these results, this research can suggest both theoretical and practical implications.

## **7. 1 Theoretical Implications**

1) The research which is related to brand equity has been carried out focusing on a variety of attributes of a product. With the consideration of increasing the importance of product design, this research suggested a new approach of the formation of brand equity with product design by examining the importance of product design on brand equity systematically in the consumers' perspectives.

2) Despite the importance of the consumers' responses to designed products, consumers' perceptions of design image have featured relatively little in past research. The design image framework developed in this research suggests that generalisable design image dimensions and scales can be found.

3) This research contributes to the branding literature because its focus is not a macro level examination of the aggregate equity outcome or even the broadly measured contributors to brand equity, but is instead a demonstration that brand equity can be manipulated at the independent construct level by providing specific design image or signals to consumers and that these images will result in brand images that influence brand equity. An empirical foundation is provided for

effective management of design image and brand image to build up strong brand equity.

4) This research contributes to the brand equity theory. In past research, design attributes were considered as part of a brand; thus, design attributes were treated as an element which can form brand image. However, the results of this research suggest that the building up of brand equity depends not only on specific brand-benefit associations, but also on design attribute-benefit associations. It means that design association could be an independent element of brand equity.

## **7.2 Managerial Implications**

The following discussion provides guidance for marketing managers trying to create consumer-based brand equity.

1) The results suggest that managers can reduce the influence of competitors' brands by providing proper design information when consumers make brand comparisons. It is very important for companies, especially companies that are planning to launch new brands in their market, to reduce the value of competitors' brand in comparisons. When consumers receive sufficient design attribute information, they appear to tend to use that information to evaluate a product. In order to use the information in the product evaluation process, a product attribute has to be considered as information for their evaluation task. Thus, providing sufficient design attribute and related diagnostic information can make consumers shift their attention from brand to the design attributes, and thus reduce the



influence of competitors' brands when making brand comparisons. Furthermore, presenting evaluation criteria can reduce the influence of competitors' brands when consumers make brand comparisons because they can then evaluate design attributes more easily, and they perceive design attributes as valuable criteria in the evaluation.

2) These results can be also used to suggest guidelines for protecting a strong brand. The provision of proper evaluation criteria for design attributes can make consumers memorize the design attribute easily, and in turn the possibility of using design attributes in their product evaluation process can be increased. The effects identified occur because evaluative criteria allowed an otherwise ambiguous stimulus to be meaningfully interpreted and encoded, thereby making them more verifiable and long-lasting. Thus, companies can differentiate their brands from competitors' brands by providing proper criteria for design attribute information. Consumers can have a clear understanding of design in terms of evaluative criteria for attributes, and in turn they can have a more stable preference for the brand. Thus, the brand could be protected from competitors' brands by giving greater attention to the influence of design attribute information.

3) The design image dimensions which were developed in this research could be a tool for designers or marketers to compare design images across product categories, and it could enable better understanding of consumers' responses to product designs. Thus, they can have an insight into consumer-oriented design through these design image dimensions and measurement scales.

4) Marketers can create and grow brand equity by managing the design image constructs. Particularly in relation to symbolic products, the research suggested that creation of different brand images through design image significantly affected the brand equity measures of purchase intentions and willingness to pay premium prices. Companies should create and develop design images to have positive brand equity effects. Marketers should specifically manage design images to build up high brand equity. To sum up, marketers should assume that creation of positive design image will directly enhance brand image, and in turn increase brand equity. The investment for positive design image could result in enhanced brand equity.

5) The research found that design image, which is formed by consumers' responses toward the product design, influence brand image. Therefore, marketers should consider design image as an important tool for creating positive brand image in their markets. The importance of product design is increasing, and consumers are using product design as a critical criterion for product evaluation and making purchasing behaviour. With this change, marketers should focus on how to build up positive design image and communicate it with their consumers. Moreover, marketers attempting to use design as a strategic tool must be prepared to adapt design as situations change. With shifts in technology and cultural variables, consumer perceptions of what is acceptable in product design also change. Marketers must formally monitor the environment to identify as early as possible those shifts that are likely to influence design tastes. By reacting quickly to produce novel designs tailored to changing conditions, marketers will be able to

maintain their positive brand image and possibly gain advantage over slower competitors.

6) Companies which are launching symbolic products in their market should invest marketing activities on making positive design image in the same way as they invest in building on brand image. The research found that design image has a direct effect on brand equity in the symbolic product. This result supports the idea that brand equity can be created by how consumers think and respond toward the product design. Therefore, in order to increase brand equity, it is necessary to emphasize the product design when companies organize promotion strategy such as advertising, PR and publicity.

7) According to the results, when consumers are exposed to product design, consumers perceive it with 6 types of design image. In addition, when they perceive product design as aesthetically pleasing, unique, feminine, noble, useful and having a compact design, preferences of the product can be increased, and in turn brand image can be improved. Thus, these 6 dimensions of design image could be useful design criteria for inducing positive consumers' responses and improving brand image.

8) This research suggested that design image has a direct effect on brand equity in the symbolic products in which aesthetics are considered as the important criteria for purchasing behaviour, while there is no significant effect of design image on brand equity in utilitarian products. It means that six dimensions of design image can be a direct strategic tool for increasing brand equity in symbolic products. In

other words, managers are able to increase the preference of a product, the probability of product purchase and the willingness to pay a premium price for aesthetics, uniqueness, femininity, nobleness, utility and a compact design, and in turn it can build up brand equity.

## CHAPTER 8 LIMITATIONS AND FUTURE RESEARCH

This research indicates a set of findings with implications for practitioners. However, it also has limitations that suggest areas for further research.

Firstly, the research is limited to a specific product-learning context with which consumers are familiar. Further research is necessary to test whether a different process holds true when consumers learn other product categories with which they are not familiar with. Therefore, if a variety of products were to be tested, the research could increase the validity and applicability of the research.

Secondly, many researchers suggest that the visual design of a product can influence consumer preference, buying intention and usage; it forms emotions in consumers, and increases levels of trust and loyalty. This relationship between the design image dimensions and such dependent variables needs to be tested systematically and their relative impact on key dependent variables investigated. This research could contribute to an overall understanding of the relationship between design and consumers behaviour.

Thirdly, the design image dimensions and measurement scales developed in the work presented here have important implications for researchers examining the perceptions of design image across cultures. For example, to investigate the applicability of these design image dimensions across cultures, it may be possible to compare the correlation coefficients in different countries. Additional research

is needed to determine the extent to which the design image dimensions are stable across cultures, because the design image dimensions and measurement scales developed here might not be appropriate for measuring design image in different cultural contexts. It could be very valuable to determine which dimensions of design image can be optimised for specific markets and which design image dimensions should remain constant across cultures.

Lastly, the research used students as the respondents. Given the nature of the product used for this study, the authors believe this to be an acceptable purposive sample. However, to generalize the results of this study, it would be desirable to conduct further research with a variety of respondent groups.

## REFERENCES

- Aaker, D. A. (1982), "Positioning Your Product," *Business Horizons*, 25 (May/June), 56-62
- Aaker, D.A. (1991), *Managing Brand Equity*, Macmillan, New York, NY.
- Aaker, D. A. (1996), *Building Strong Brands*, New York, The Free Press.
- Aaker, D. A. (1992), "The Value of Brand Equity," *Journal of Business Strategy*, 13, (Jul/Aug.), 27-32.
- Aaker, D. A. and Alexander Biel, eds. (1992), *Building Strong Brands*, Hillsdale, NJ: Lawrence Erlbaum Associated.
- Aaker, Jennifer L. (1997), "Dimensions of Brand Personality," *Journal of Marketing Research*, 34 (August), 347-356
- Aaker, Jennifer L. (2000), "Accessibility or Diagnosticity? Disentangling the Influence of Culture on Persuasion Processes and Attitudes," *Journal of Consumer Research*, 26 (March), 340-57.
- Ahmed, Z, U. (1991), "The Influence of the Components of a State's Tourist Image on Product Positioning Strategy," *Tourism Management*, 12, 331-334.
- Algom, Daniel and William S. Cain. (1991), "Remembered Odors and Mental Mixtures: Tapping Reservoirs of Olfactory Knowledge," *Journal of Experimental Psychology: Human Perception and Performance*, 17 (November), 1104-1119.
- Assael, H. (1998), *Consumer Behavior and Marketing Action*, Southwestern College Publishing, Cincinnati, OH.
- Alt, M., Griggs, S. (1988), "Can a brand be cheeky?" *Marketing Intelligence and Planning*, 6 (4), 9-26.
- Ambler, T. (1992), *Need-to-Know-Marketing*, Century Business, London.
- American Marketing Association (1960), *Marketing Definitions: A Glossary of Marketing Terms*, AMA, Chicago, IL.
- Anderson, J.C. and D.W., Gerbing (1988), "Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach," *Psychological Bulletin*, 103(3), 411-423
- Anderson, John R. and Christian Lebiere (1998), *The Atomic Components of Thought*, Mahwah, NJ: Erlbaum.

- Anderson, John R. and Gordon H. Bower (1973), *Human Associative Memory*, New York: Halstead.
- Babbie, E.R. (1973), *Survey Research Methods*, Belmont, CA: Wadsworth Publishing Company Inc.
- Baloglu, S., and K. W. McCleary (1999a), "U.S. International Pleasure Travelers' Images of Four Mediterranean Destinations: A Comparison of Visitors and Nonvisitors," *Journal of Travel Research*, 38 (2), 144–52.
- Bargozzi, R.P. (1980), *Causal Models in Marketing*, New York: Wiley
- Bargozzi, R. P. and Youjae Yi (1988), "On the Evaluation of Structural Equation Models," *Journal of Advertising Research*, 26 (6), 22-35.
- Barsalou, Lawrence W. (1985), "Ideals, Central Tendency, and Frequency of Instantiation as Determinants of Graded Structure," *Journal of Personality and Social Psychology*, 51 (6), 1173-1182.
- Barwise, Patrick, Christopher Higson, Andrew Likierman, and Paul Marsh (1989), *Accounting for Brands*, London; London Business School and the Institute for Chartered Accountants in England and Wales.
- Batra, Rajeev and Olli T. Ahtola (1991), "Measuring the Hedonic and Utilitarian Sources of Consumer Attitudes," *Marketing Letter*, 2(April), 159-170
- Bearden, W. O., Richard G. Netemeyer, and Jesse E. Teel (1989), "Measurement of Consumer Susceptibility to Interpersonal Influence," *Journal of Consumer Research*, 15(March), 473-481
- Bearden, W. O., Sharma, S., and Teel, J. E. (1982), "Sample Size Effects on Chi-square and Other Statistics Used in Evaluating Causal Models," *Journal of Marketing Research*, 19, 425–430.
- Berkeley, George (1710). *Principles of Human Knowledge*. Dublin: Jeremy Pemyat.
- Berkowitz, Marvin (1987), "Product Shape as a Design Innovation Strategy," *Journal of Product Innovation Management*, 4 (December), 274-283.
- Bettinger, CO., Dawson Jr., L.E., and Wdes, H.G. (1979), "The Impact of Free-Sample Advertising," *Journal of Advertising Research*, 19(3), 35-39.
- Biel, Alexander L. (1992), "How Brand Image Drives Brand Equity," *Journal of Advertising Research*, 32 (November), RC6-RC12
- Biel, Alexander L. (1993), "Converting Image Into Equity," In *brand equity &*



- Advertising*, edited by David A Aaker, and Alexander L. Biel. New Jersey: Lawrence Erlbaum Associates, Inc.
- Bird, M., Channon, C, and Ehrenberg, A.S.C. (1970), "Band Image and Brand Usage," *Journal of Marketing Research*, 12(August), 307-14.
- Birdwell, A. E. (1986), "A Study of the Influence of Image Congruence on Consumer Choice," *The Journal of Business*, 41(January), 76-88.
- Bitner, Mary Jo (1992), "Servicescapes: The Impact of Physical Surroundings on Customers and Employees," *Journal of Marketing*, 56 (April), 57-71.
- Boulding, K. (1956), *The Image*, University of Michigan Press, Ann Arbour, MI.
- Bloch, Peter H. (1995), "Seeking the Ideal Form: Product Design and Consumer Response," *Journal of Marketing*, 59 (July), 16-29
- Bloch, Peter H., Frederic F. Brunel, and Todd J. Arnold (2003), "Individual Differences in the Centrality of Visual Product Aesthetics: Concept and Measurement," *Journal of Consumer Research*, 29(March), 551-565
- Brewin, C. R. (1989), "Cognitive Change Processes in Psychotherapy," *Psychological Review*, 96(45), 379-394
- Brown, G. (1992), *People, Brands and Advertising*, Millward Brown International, New York, NY.
- Bruce, Margaret and Maureen Whitehead (1988), "Putting Design into the Picture: The Role of Product Design in Consumer Purchase Behavior," *Journal of Marketing Research Society*, 30 (2), 147-62.
- Bullmore, J. (1984), "The Brand and its Image Re-visited," *International Journal of Advertising*, 3, 235-238.
- Buxton, Pamela (2006), "Marketing," *London*: Dec 13. 54-55
- Carmines, Edward G. and John P. McIver (1981), "Analyzing Models with Unobserved Variables: Analysis of Covariance Structures," in *Social Measurement*, ed. George W. Bohrnstedt and Edgar F. Borgatta, Beverly Hills, CA: Sage, 65-116.
- Carpenter, Gregory S. and Kent Nakamoto (1989), "Consumer Preference Formation and Pioneering Advantage," *Journal of Marketing Research*, 26(August), 285-298
- Ceurvorst, R. A. (1994). "Brand Equity Measure Based on Consumer Commitment," *ARF Workshop Transcript*, Feb., 15-16.
- Chaudhuri, Arjun (2002), "How Brand Reputation Affects the Advertising-Brand Equity Link," *Journal of advertising research*, May/June, 33-43.

- Choi, W.J. (2002), *A Study on the Typology of Brand Image and the Influence of Brand Personality*, Ph.D. Dissertation, Hankuk University of Foreign Studies.
- Cobb-Walgren, Cathy J., Cynthia A. Rubles, and Naveen Donthu (1995) "Brand Equity, Brand Preference, and Purchase Intent," *Journal of Advertising*, 24(3), 25-40.
- Cohen, Joel B. (1990), *Attitude, Affect, and Consumer Behavior*, Cambridge University Press, New York.
- Cooper, Robert G. and Elko Kleinschmidt (1987), "New Products: What Separates Winners from Losers?" *Journal of Product Innovation Management*, 4 (September), 169-84.
- Csikszentmihalyi, Mihaly and Rick E. Robinson (1990), *The Art of Seeing*, Malibu, CA: J. Paul Getty Museum.
- Davis, Marian L. (1987), *Visual Design in Dress*. Englewood Cliffs, NJ: Prentice-Hall.
- De Chernatony, L., MacDonald, M. (1998), *Creating Powerful Brands*, Butterworth Heinemann, Oxford.
- Debevec, K., and Iyer, E. (1986), "The Influence of Spokespersons in Altering A Product's Gender Image: Implications for Advertising Effectiveness," *Journal of Advertising*, 15(4), 12-19.
- Delgado-Ballester, E. and Munuera-Aleman, J. (2005), "Does Brand Trust Matter to Brand Equity?" *Journal of Product and Brand Management*, 14(3), 187-196.
- De Mortanges and Van Liel (2003), "Brand Equity and Shareholder Value," *European Management Journal*, 21(4), 520-535
- Dibb, S., Simkin, L., Pride, W.M., Ferrell, O.C. (1997), *Marketing: Concepts and Strategies*, 3rd European ed., Houghton Mifflin, Boston, MA.
- Dichter, E. (1985), "What's In An Image," *Journal of Consumer Marketing*, 2, 1 (Winter), 75-81.
- Dickinson, Anthony, David Shanks, and John Evenden (1984) "Judgment of Act-Outcome Contingency: The Role of Selective Attribution," *Quarterly Journal of Experimental Psychology*, 36 (February), 29-50.
- Dillman, Richard. (1978), *Mail and Telephone Surveys: Total Design Method*, New York, John Wiley
- Dobni, Dawn and George M.Zinkhan (1990), "In Search of Brand Image: a Foundation Analysis," *Advances in Consumer Research*, 17, 110-119.

- Donovan, Robert J. and John R. Rossiter (1982), "Store Atmosphere: An Environmental Psychology Approach," *Journal of Retailing*, 58(Spring), 34-57
- Downing, Francis (1992), "Image Banks: Dialogues, Between the Past and the Future," *Environmental and Behaviour*, 24 (4), 441-70
- Doyle, P. (1994), *Marketing Management and Strategy*, Prentice-Hall, Englewood Cliffs, NJ.
- Dumaine, Brian (1991), "Design that Sells and Sells," *Fortune*, (March), 86-94
- Durgee, J.F., and Stuart, R.W. (1987), "Advertising Symbols and Brand Names That Best Represent Key Product Meanings," *Journal of Consumer Marketing*, 4, 3(Summer), 15-24.
- Ecroyd, L. and Lyons, H. (1979), "Improve your product development: organising to develop," *Institute of Food Science and Technology (UK), Proceedings*, 12 (4), 260-265.
- Engel, James F., Roger D. Blackwell, and Paul W. Miniard (1993), *Consumer Behaviour*, Orlando, FL: The Dryden Press.
- Fabricant, Florence (2006), "Tea's New Bag," *Globe and Mail*, Sept. 16, L2.
- Faircloth, James B., Louis M. Capella, and Bruce L. Alford (2001), "The Effect of Brand Attitude and Brand Image on Brand Equity," *Journal of Marketing Theory and Practice*, 9 (Summer), 61-75
- Farquhar, P.H. (1989), "Managing brand equity," *Marketing Research*, 1, 24-33.
- Feldwick, P. (1996), "Do we really need "brand equity?" *The Journal of Brand Management*, 4 (1), 9-28.
- Fowler, F.J., Jr. (1984), *Survey Research Methods*, Beverly Hills, CA: Sage Publications.
- Frazer, CF. (1983) "Creative Strategy: A Management Perspective," *Journal of Advertising*, 12 (4), 36-41.
- Friedmann, R., and Lessig, V.P. (1987), "Psychological Meaning of Products and Product Positioning," *Journal of Product Innovation Management*, 4, 265-73.
- Gardner, B.G., and Levy, S.J. (1955), "The Product and the Brand," *Harvard Business Review*, March-April, 33-39.
- Gensch, D.H. (1978), "Image-Measurement Segmentation," *Journal of Marketing Research*, 15(August), 384-395.

- Glock, C.Y. (1967), ed. *Survey Research in the Social Sciences*, New York, NY: Russell Sage Foundation.
- Goodyear, M. (1993), "Reviewing the Concept of Brands and Branding," *Marketing Research Today*, 21 (2), 75-79.
- Gordon, Peter C. and Keith J. Holyoak (1983), "Implicit Learning and Generalization of the Mere Exposure Effect," *Journal of Personality and Social Psychology*, 45 (September), 492-500.
- Grubb, E.L., and Grathwohl, H.L. (1967), "Consumer Self-Concept, Symbolism and Market Behavior: A Theoretical Approach," *Journal of Marketing*, 31(October), 22-27.
- Hair, J. F., Jr., R. E. Anderson, R. L. Tatham and W. C. Black (1998), *Multivariate Data Analysis*, 5<sup>th</sup> ed., Prentice Hall, NJ.
- Hendon, D.W., and Williams, E.L. (1985), "Winning the Battle For Your Customer," *Journal of Consumer Marketing*, 2, 4(Fall), 65-75.
- Herzog, H. (1963), "Behavioral Science Concepts for Analyzing the Consumer," *Marketing and the Behavioral Sciences*, Peny Bliss, ed., (Boston: Allyn and Bacon, Inc.), 76-86.
- Hirschman, Elizabeth C. (1980), "Attributes and Layers of Meaning," in *Advances in Consumer Research*, 7, Jerry C. Olsen, ed., Ann Arbor, MI: Association for Consumer Research, 101-118
- Hoch, Steven J. and Young-Won Ha (1986), "Consumer Learning: Advertising and the Ambiguity of Product Experience," *Journal of Consumer Research*, 13 (September), 221-233.
- Holbrook, M. B. (1986), "Emotion in the Consumption Experience: Toward a New Model of the Human Consumer," in *The Role of Affect in Consumer Behaviour: Emerging Theories and Applications*, ed. Robert A. Peterson et al., Lexington, MA: Heath, 17-52
- Holbrook, M. B. and William L. Moore (1981), "Feature Interactions in Consumer Judgments of Verbal Versus Pictorial Presentations," *Journal of Consumer Research*, 8 (1), 103-113
- Holbrook, M. B. and Zirlin, R. B. (1985), "Artistic Creation, Art Works and Aesthetic Appreciation: Some Philosophical Contributions to Nonprofit Marketing," *Advances in Nonprofit Marketing*, 1, 1-54.
- Holden, Stephen J.S. (1992), *Brand Equity Through Brand Awareness: Measuring and Managing Brand Retrieval*, Ph.D. Dissertation, University of Florida.

- Hollins, Bill and Stuart Pugh (1990), *Successful Product Design*, London: Butterworths.
- Homa, Donald (1984), "Design the Ninth Principle of Excellence: The Product Half of the Business Equation," *Innovation*, 4 (Fall), 2-4
- Hu, Li-tze and Peter M. Bentler (1999), "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives," *Structural Equation Modeling*, 6(1), 1-55
- Hubbard, Timothy L. (1994), "Memory Psychophysics," *Psychological Research*, 56 (July), 237-250.
- Kaiser, H. F. (1974), "Little Jiffy, Mark IV," *Educational Psychology Measurement*, 34, 111-117
- Kamakura, Wagner A., and Gary J. Russell (1993), "Measuring Brand Value with Scanner Data," *International Journal of Research in Marketing*, 10(March), 9-22.
- Kapferer, Jean-Noel (1992), *Strategic Brand Management: New Approaches to Creating and Evaluating Brand Equity*, New York: The Free Press.
- Keller, K. L. (1993), "Conceptualizing, Measuring and Managing Customer-Based Brand Equity", *Journal of Marketing*, 57, 1-22.
- Keller, K. L. (2003), *Strategic Brand Management: Building, Measuring, and Managing Brand Equity*, 2nd ed. Upper Saddle River, NJ: Prentice Hall.
- Khalil, Elias L. (2000), "Symbolic Products: Prestige, Pride, and Identity Goods," *Theory and Decision*, 49 (1), 53-77
- Kim, Hong-bumm, Woo Gon Kim and Jeong A. An (2003), "The Effect of Consumer-based Brand Equity on Firms' Financial Performance," *Journal of Consumer Marketing*, 20(4), 335-351.
- Kinner, T., Bernhardt, K. (1986), *Principles of Marketing*, 2nd ed., Scott Foresman, Glenview, IL.
- Kirpatrick, C. A. (1962), *Advertising: Mass Communication in Marketing*, 2<sup>nd</sup> ed., Mifflin CO.
- Kotler, P. (1971), *Marketing Decision Making: A Model Building Approach*, Holt, Rinehart and Winston, New York.
- Kotler, P., Armstrong, G., Saunders, J., and Wong, V. (1996), *Principles of Marketing*, The European Edition, Prentice-Hall, Hemel Hempstead.
- Kotler, P. and G. Alexander Rath (1984), "Design: A Powerful but Neglected Strategic Tool," *Journal of Business Strategy*, 5 (Fall), 16-21

- Krathwohl, D. (1997), *Methods of Educational and Social Science Research: An Integrated Approach*, Addison Wesley Longman, 2nd edition.
- Krishnan, H.S. (1996), "Characteristics of Memory Associations: A Consumer-based Brand Equity Perspective," *International Journal of Research in Marketing*, 13, 389-405
- Kunst-Wilson, William R. and Robert B. Zajonc (1980), "Affective Discrimination of Stimuli that Cannot Be Recognized," *Science*, 207 (February), 557-558
- Kwon, Yoon-Hee (1990), "Brand Name Awareness and Image Perception of Women's Daytime Apparel," *Perceptual and Motor Skills*, 71, 743-752
- Langlois, Judith H. and Lori A. Roggman (1990), "Attractive Faces Are Only Average," *Psychological Science*, 1 (March), 115-121
- Lassar, Walfried, Branwari Mittal, and Arun Sharma (1995), "Measuring Customer-based Brand Equity," *Journal of Consumer Marketing*, 12(4), 11-19
- Lazarus, R. S. (1982), "Thoughts on the Relations between Emotions and Cognition," *American Physiologist*, 37(10), 1019-1024.
- Lee, T. H. (1997), "A Development of Korean Destination Image Measurement Scale," *Journal of Tourism Sciences*, 22 (3), 13-23
- Levitt, T. (1962), *Innovation in Marketing*, edition by Pan Books, McGraw-Hill, London.
- Levy, S.J. (1958), "Symbols By Which We Buy," *Advancing Marketing Efficiency*, American Marketing Association, December, 409-16.
- Levy, S.J. (1978), *Marketplace Behavior*, NY:AMACOM.
- Levy, S.J., and Glick, LO. (1973), *Imagery and Symbolism*, Marketing Manager's Handbook, Stewart H. Britt, Editor (Chicago, IL: Dartnell).
- Lewalski, Zdzislaw M. (1988), *Product Esthetics: An Interpretation for Designers*, Carson City, NV: Design & Development Engineering Press.
- Leuthesser, Lance, ed. (1988), "Defining, Measuring and Managing Brand Equity: A Conference Summary," Report 88-104. Cambridge, MA: Marketing Science Institute.
- Loken, Barbara and James Ward (1990), "Alternative Approaches to Understanding the Determinants of Typicality," *Journal of Consumer Research*, 17 (September), 111-26.
- Louviere, Jordan and Richard Johnson (1988), "Measuring Brand Image with Conjoint Analysis and Choice Models," in *Defining, Measuring, and*

- Managing Brand Equity: A Conference Summary*, ed. Lance Leuthesser, Report 88-104, Cambridge, MA: Marketing Science Institute, 20-22.
- Lucy, John A. and Richard A. Shwedder (1988), "The Effect of Incidental Conversation on Memory for Focal Colours," *American Anthropology*, 90 (December), 923–931.
- Lunn, T. (1978), "Segmenting and Constructing Markets," in Worcester R.M., Downham, J. (Eds), *Consumer Market Research Handbook*, 2nd ed., Van Nostrand Reinhold Co. (UK) Ltd, London, 343-76.
- Luo, Lan, P.K. Kannan, and Brian T. Ratchford (2008), "Incorporating Subjective Characteristics in Product Design and Evaluations," *Journal of Marketing Research*, 45(2), 182-194
- Lynch, Howard Marmorstein, and Michael F Weigold (1998), "Choices from Sets Including Remembered Brands Use of Recalled Attributes and Prior Overall Evaluations," *Journal of Consumer Research*, 15(September), 169-84
- MacKenzie, Scot B., Richard J. Lutz, and George E. Belch (1986), "The Role of Attitude Toward the Ad as a Mediator of Advertising Effectiveness: A Test of Competing Explanations," *Journal of Marketing Research*, 23 (May), 130-143.
- Mahajan, Vijay, Vithala R. Rao, and Rajendra K. Srivastava (1994), "An Approach to Assess the Importance of Brand Equity in Acquisition Decisions," *Journal of Product Innovation Management*, 11(3), 221-235.
- Maheswaran, Durairaj, Diane M. Mackie, and Shelly Chaiken (1992), "Brand Name as a Heuristic Cue: The Effects of Task Importance and Expectancy Confirmation on Consumer Judgments," *Journal of Consumer Psychology*, 1 (4), 317-36.
- Malhotra, N. K. and Birks, D. (2003), *Marketing Research: An Applied Approach*, Pearson Education, 2nd European ed.
- Malhotra N. K., Peterson, M. and Kleiser, S. B., (1999), "Marketing Research: A State-of-the-art Review and Directions for the Twenty-first Century," *Journal of the Academy of Marketing Science*, 27(2), 160-183.
- Maltz, Eliot (1991), "Managing Brand Equity: A Conference Summary," Report 91-110. Cambridge, MA: Marketing Science Institute.
- Mano, H., and Richard L. Oliver (1993), "Assessing the Dimensions and Structure of the Consumption Experience: Evaluation, Feeling, and Satisfaction," *Journal of Consumer Research*, 20 (4), 451-466
- Martineau, P. (1957), *Motivation in Advertising*, McGraw-Hill, New York, NY.
- Martineau, P. (1959), "Sharper Focus for the Corporate Image," *Harvard Business Review*, 36 (1), 49-58.

- Martindale, Colin and Kathleen Moore (1988), "Priming, Prototypicality, and Preference," *Journal of Experimental Psychology: Human Perception and Performance*, 14 (November), 661-670
- Martindale, Colin, Kathleen Moore, and Alan West (1988), "Relationship of Preference Judgements to Typicality, Novelty, and Mere Exposure," *Empirical Studies of the Arts*, 6 (1), 79-96
- Maslow, Abraham H. (1970), *Motivation and Personality*, 2<sup>nd</sup> ed. New York: Harper & Row Publishers, Inc.
- McDowell, Walter S. (1998), *Conceptualizing and Measuring the Effects of Brand Equity on Television Program Ratings Performanc*, Ph.D. disseration, Degree of Doctor of Philosophy, University of Florida.
- Mcquitty, Shaun (2004), "Statistical Power and Structural Equation Models in Business Research," *Journal of Business Research*, 57, 175-183
- Medin Douglas L. and Edward E. Smith (1984), "Concepts and Concept Formation," *Annual Review of Psychology*, 35, 113-138
- Mehrabian, Albert and James Russell (1974), *An Approach to Environmental Psychology*, Cambridge, MA: MIT Press.
- Mooy, Sylvia C. and Robben, Henry S.J. (2002), "Managing Consumers' Product Evaluations Through Direct Product Experience," *Journal of Product and Brand Management*, 11(7), 432-446.
- Moskowitz, H., Alex Gofman, Jacqueline Beckley, and Jeffrey Ewald (2005), "Brand Name Anatomy," *Marketing Research*, 17(3), 14-20.
- Muehling, Darrel D. (1986), "Investigation of Factors Underlying Attitude-Toward-Advertising-in General," *Journal of Advertising*, 16(1), 33-40
- Murphy, J. (1992), *What is Branding? (Branding a Key Marketing Tool)*, Macmillan, Basingstoke.
- Murphy, J. (1998), "What is Branding?" In: *Brands, the New Wealth Creators*, (Eds.) Hart, S. and Murphy, J., London, Macmillan.
- Na, Kwang Jin and Yun-young Hwang (2003), "The Role of Providing Evaluative Criteria of Sensory Attributes on Consumer Preference - Variance and Resistance to Market Information," *Korea Marketing Research*, 5(1), 1-18.
- Nedungadi, Prakash and J. Wesley Hutchinson (1985), "The Prototypicality of Brands: Relationships with Brand Awareness, Preference and Uasge," in *Advances in Consumer Research*, 12, ed. Elizabeth C. Hirschman and Morris Holbrook, Provo UT: association for Consumer Research, 498-503



- Neter, John, William Wasserman, and Michael H. Kunter (1989), *Applied Linear Regression Models*, Homewood, IL; Irwin.
- Newman, J.W. (1957), "New Insight, New Progress, For Marketing," *Harvard Business Review*, November-December, 95-102.
- Noth, W. (1988), "The Language of Commodities Groundwork for a Semiotics of Consumer Goods," *International Journal of Research in Marketing*, 4, 173-186.
- Nunnally, Jun C. (1967), *Psychometric Theory*, New York: McGraw-Hill.
- Nussbaum, Bruce (1988), "Smart Design," *Business Week*, April 11, 102-17.
- Park, C. W., Jaworski, Bernard and MacInnis, Deborah J. (1986), "Strategic Brand Concept-Image Management," *Journal of Marketing*, 50(4), 135-146.
- Park, C. Whan, David L. Mothersbaugh, and Lawrence Feick (1994), "Consumer Knowledge Assessment," *Journal of Consumer Research*, 21 (1), 71-82
- Park, Chan Su and V. Srinivasan (1994), "A Survey-Based Method for Measuring and Understanding Brand Equity and Its Extendibility," *Journal of Marketing Research*, 31 (May), 271-288.
- Pike, S., and C. Ryan (2004), "Destination Positioning Analysis through a Comparison of Cognitive, Affective, and Conative Perceptions," *Journal of Travel Research*, 42 (4): 333-42.
- Pinsonneault, A. and Kraemer, K. L. (1993), "Survey Research Methodology in Management Information Systems: An Assessment," *Journal of Management Information Systems*, 10 (2), 75-106
- Pitta, Dennis A. and Lea Prevel Katsanis (1995), "Understanding Brand Equity for Successful Brand Extension," *Journal of Consumer Marketing*, 12(4), 51-64.
- Pohlman, A., and Mudd, S. (1973), "Market Image as a Function of Group and Product Type: A Quantitative Approach," *Journal of Applied Psychology*, 7(2), 167-71.
- Randall, Taylor, Christian Terwiesch, and Karl T. Ulrich (2007), "User Design of Customized Products," *Marketing Science*, 26(2), 268-280.
- Rangaswamy, A., Burke, R. and Olive, T.A. (1993), "Brand equity and the extendibility of brand names," *International Journal of Research in Marketing*, 10 (1), 61-75.
- Reed, Stephen K. (1972), "Pattern Recognition and Categorization," *Cognitive Psychology*, 3 (July), 382-407

- Reynolds, Thomas J., and Gutman, J. (1984) "Advertising is Image Management," *Journal of Advertising Research*, 24(February-March), 27-38.
- Reynolds, W.H. (1965), "The Role of the Consumer in Image Building," *California Management Review*, Spring, 69-76.
- Rodger, L. W. (1965), *Marketing a Competitive Economy*, Hutchinson CO.
- Rosch E., and Mervis. C. B., (1975) "Family Resemblances: Studies in the Internal Structure of Categories," *Cognitive Psychology*, 7, 573-605
- Rosch, Eleanor (1978), "Principles of Categorization," in *Cognition and Categorization*, ed. E. Rosch and B. B. Lloyd, Hillsdale, NJ: Erlbaum, 27-47
- Roth, Martin (1995), "The Effects of Culture and Socio-economics on the Performance of Global Brand Image Strategies," *Journal of Marketing Research*, 32(May), 163-175
- Runyon, K.E., Stewart, D.E. (1987), *Consumer Behaviour and the Practice of Marketing*, Merrill Publishing, Columbus, OH.
- Saunders, M., Lewis, P. and Thornhill, A. (2000), *Research Methods for Business Students*, Second Edition, Prentice Hall.
- Shackleton, J. P. & Sugiyama, K., (1998) "Prototype Theory and the Modelling of New Product Perception" in *Managing New Product Innovation*, R. Jerrard (ed), Taylor & Francis Ltd., UK.
- Shapiro, Stewart and Spence, Mark T. (2002), "Factors Affecting Encoding, Retrieval, and Alignment of Sensory Attributes in a Memory-Based Brand Choice Task," *Journal of Consumer Research*, 28 (March), 603-617.
- Sheth, J. and Newman, B. (1991), "Why we buy, what we buy: a theory of Consumption Values," *Journal of Business Research*, 22, 159-70.
- Siegel, S. (1956), *Non-parametric Statistics for the Behavioural Sciences*, McGraw-Hill, New York.
- Siegel, Michael H. and David E. Siegel (1976), "Improving Memory for Colour," *Bulletin of the Psychonomic Society*, 7 (May), 461-464.
- Simon, Carol J., and Mary W. Sullivan (1993), "The Measurement and Determinants of Brand Equity: A Financial Approach," *Marketing Science*, 12 (Winter), 28-52.
- Sirgy, M. Joseph (1985), "Using Self-Congruity and Ideal Congruity to Predict Purchase Motivation," *Journal of Business Research*, 13, 195-206

- Snyder, M., and DeBono, K.G. (1985), "Appeals to Image and Claims About Quality: Understanding the Psychology of Advertising," *Journal of Personality and Social Psychology*, 49(3), 86- 97.
- Solomon, Michael R. (1983), "The Role of Products as Social Stimuli: A Symbolic Interactionist Perspective," *Journal of Consumer Research*, 10 (December), 319-29.
- Sommers, M.S. (1963), "Product Symbolism and the Perception of Social Strata," *Toward Scientific Marketing*, Stephen A. Greyser, Editor (Chicago: American Marketing Association), 200-216.
- Sönmez, S., and E. Sirakaya (2002), "A Distorted Destination Image? The Case of Turkey," *Journal of Travel Research*, 41 (2), 185–96.
- Srinivasan, S. and Till Brian D. (2002), "Evaluation of Search, Experience and Credence Attributes: Role of Brand Name and Product Trial," *Journal of Product and Brand Management*, 11(7), 417-431.
- Srivastava, R.K., Shocker, A.D. (1991), "Brand Equity: A Perspective on Its Meaning and Measurement," *Marketing Science Institute*, Boston, MA, working paper, 91-124.
- Stanton, W.T., Etzel, M.J., Walker, B.J. (1991), *Fundamentals of Marketing*, 9th ed., McGraw-Hill, New York, NY.
- Styles, C., Ambler, T. (1995), "Brand Management," in Crainer, S. (Eds), *Financial Times Handbook of Management*, Pitman, London, 581-93.
- Sujan, M. (1985), "Consumer Knowledge: Effects on Evaluation Strategies Mediating Consumer Judgements," *Journal of Consumer Research*, 12 (June), 31-46.
- Sujan, M. and Christine D. (1987), "Product Categorization and Inference Making: Some Implications for Comparative Advertising," *Journal of Consumer Research*, 14(3), 372-378.
- Swartz, T.A. (1983), "Brand Symbols and Message Differentiation," *Journal of Advertising Research*, 23, 5(October/November), 59-64.
- Troxell, M. D. and B. Judell (1981), *Fashion Merchandising*, McGraw Hill.
- Tucker, W. T. (1991), "How Much of the Corporate Image Is Stereotype?," *Journal of Marketing*, 25 (3), 61-66
- Van Osselaer, Stijn M. J. and Chris Janiszewski (2001) "Two Ways of Learning Brand Associations," *Journal of Consumer Research*, 28 (September), 202–223.

- Van Osselaer, Stijn M. J. and Joseph W. Alba (2000), "Consumer Learning and Brand Equity," *Journal of Consumer Research*, 27 (June), 1–16.
- Van Osselaer, Stijn M. J. and Joseph W. Alba (2003), "Locus of Equity and Brand Extension," *Journal of Consumer Research*, 29 (March), 539-550.
- Waldmann, Michael R. and Keith J. Holyoak (1992), "Predictive and Diagnostic Learning within Causal Models: Asymmetries in Cue Competition," *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 121 (June), 222-236
- Watkins, T. (1986), *The Economics of the Brand*, McGraw-Hill, London.
- Wentz, Laurel (1989), "WPP Considers Brand Valuation," *Advertising Age*, 24
- West, Patricia M., Christina L. Brown, and Stephen J. Hoch (1996), "Consumption Vocabulary and Preference Formation," *Journal of Consumer Research*, 23 (September), 120-135.
- Wilson, Timothy D. and Jonathan W. Schooler (1991), "Thinking Too Much: Introspection Can Reduce the Quality of Preferences and Decisions," *Journal of Personality and Social Psychology*, 60 (February), 181–192.
- Wolfe, A. (1993), *Profit from Strategic Marketing: How to Succeed in Business Markets*, FT Pitman Publishing, London.
- Wood, Lias (2000), "Brands and brand equity: definition and management," *Management Decision*, 38 (9), 662-669
- Woods, Walter (1960), "Psychological Dimensions of Consumer Decision," *Journal of Marketing*, 24 (1), 15-19
- Yin, Robert K. (2002), *Case Study Research: Design and Methods*. Third Edition. Applied Social Research Method Series Volume 5, Sage Publications, California.
- Yoo, Boonghee, Naveen Donthu, and Sungho Lee (2000), "An Examination of Selected Marketing Mix Elements and Brand Equity," *Journal of the Academy of Marketing Science*, 28(2), 195-211.
- Yoo, Boonghee, Naveen Donthu, and Sungho Lee (2001), "Developing and validating a Multidimensional Consumer-based Brand Equity Scale," *Journal of Business Research*, 52, 1-14.
- Zaichkowsky, J. L. (1994), "The Personal Involvement Inventory: Reduction, Revision, and Application to Advertising," *Journal of Advertising*, 15(2), 4-14.
- Zaichkowsky, Judith L. (1985a), "Measuring the Involvement Construct," *Journal of Consumer Research*, 12(December), 341-352.

Zajonc, R.B. (1980), "Feeling and Thinking: Preferences Need no Inferences," *American Psychologist*, 35, 151–175.

Zolli, Andrew (2004), "Why Design Matters More," *American Demographics*, October, 52-53.

# APPENDICES

Appendix 1 The Stimuli for the Brand and Design Attribute with Evaluative Criteria Condition (learning phase) (First Step)

Appendix 2 Profiles for Learning Phase (First Step)

Appendix 3 Profiles for Prediction of product quality phase (First Step)

Appendix 4 26 Designs of Mobile Phones (Second Step)

Appendix 5 Means of Typicality of 26 Mobile Phone Designs (Second Step)

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Appendix 9 The Questionnaire for the First step

Appendix 10 The 1<sup>st</sup> Questionnaire for the Second step

Appendix 11 The 2<sup>nd</sup> Questionnaire for the Second step

Appendix 12 The 3<sup>rd</sup> Questionnaire for the Second step

Appendix 13 The 4<sup>th</sup> Questionnaire for the Second step

Appendix 14 The 5<sup>th</sup> Questionnaire for the Second step


Appendix 15 The Questionnaire for the Third step

## Appendix 1 (First Step)

### The Stimuli for the Brand and Design Attribute with Evaluative Criteria Condition (learning phase)

**Common Knowledge :**  
The type of trainers' design is divided into **Frontline-up Design** and **Backline-up Design**.


**Frontline-up Design**



**Frontline-up Design :**  
Using Frontline-up design can minimize the gap between your feet and the inner part of trainers. Therefore, when you run wearing the Frontline-up trainers, it can maximize the feeling of wearing trainers.

**Common Knowledge :**  
The type of trainers' design is divided into **Frontline-up Design** and **Backline-up Design**.

**Backline-up Design**




**Backline-up Design :**  
Backline-up design has an advantage that it can protect your heel, but it has some disadvantages that Backline-up design cannot reduce the weight of trainers and the feeling of wearing trainers is worse than Frontline-up design.

### The Stimuli for the Brand and Design Attribute (learning phase)


**Common Knowledge :**  
The type of trainers' design is divided into **Frontline-up Design** and **Backline-up Design**.

**Frontline-up Design**



**Common Knowledge :**  
The type of trainers' design is divided into **Frontline-up Design** and **Backline-up Design**.

**Backline-up Design**



### Descriptions for Trainers (learning phase)

1): A: brand condition, B: brand and design attribute condition, C: brand and design attributes with evaluation criteria condition

**Model : T-MAC** For Group A<sup>1)</sup>

**Brand : HIGHPERF**  
**Model Name : T-Mac 1**  
**Bottom style : Rubber Flexi Sole**  
**Material : Gore-Tex**

Consumer evaluation score : ★★★★★

★★★★★ : very good quality  
★ : very low quality

**Model : T-MAC** For Group B and Group C

**Brand : HIGHPERF**  
**Model Name : T-Mac 1**  
**Type of design : Frontline-up Design**  
**Bottom style : Rubber Flexi Sole**  
**Material : Gore-Tex**

Consumer evaluation score : ★★★★★

★★★★★ : very good quality  
★ : very low quality

## Appendix 2 Profiles for Learning Phase (First Step)

### 1) Brand Condition

Model name	Quality	Brand	Sole Material	overall material	quality level
T-Mac 1	High	Highperf	rubber flexi sole	Gore-Tex	5
T-Mac 2	High	Highperf	herringbone sole	Gore-Tex	4
T-Mac 3	High	Highperf	rubber flexi sole	Gore-Tex	4
T-Mac 4	High	Highperf	herringbone sole	Gore-Tex	5
T-Mac 5	High	Highperf	rubber flexi sole	Gore-Tex	5
T-Mac 6	High	Highperf	herringbone sole	Gore-Tex	4
N-Bru 1	Low	Athlete	rubber flexi sole	Gore-Tex	2
N-Bru 2	Low	Athlete	herringbone sole	Gore-Tex	1
N-Bru 3	Low	Athlete	rubber flexi sole	Gore-Tex	1
N-Bru 4	Low	Athlete	herringbone sole	Gore-Tex	2
N-Bru 5	Low	Athlete	rubber flexi sole	Gore-Tex	2
N-Bru 6	Low	Athlete	herringbone sole	Gore-Tex	1

### 2) Brand and Design Attribute Condition

Model name	Quality	Brand	Design attribute	Sole Material	overall material	quality level
T-Mac 1	High	Highperf	frontline-up design	rubber flexi sole	Gore-Tex	5
T-Mac 2	High	Highperf	frontline-up design	herringbone sole	Gore-Tex	4
T-Mac 3	High	Highperf	frontline-up design	rubber flexi sole	Gore-Tex	4
T-Mac 4	High	Highperf	frontline-up design	herringbone sole	Gore-Tex	5
T-Mac 5	High	Highperf	frontline-up design	rubber flexi sole	Gore-Tex	5
T-Mac 6	High	Highperf	frontline-up design	herringbone sole	Gore-Tex	4
N-Bru 1	Low	Athlete	backline-up design	rubber flexi sole	Gore-Tex	2
N-Bru 2	Low	Athlete	backline-up design	herringbone sole	Gore-Tex	1
N-Bru 3	Low	Athlete	backline-up design	rubber flexi sole	Gore-Tex	1
N-Bru 4	Low	Athlete	backline-up design	herringbone sole	Gore-Tex	2
N-Bru 5	Low	Athlete	backline-up design	rubber flexi sole	Gore-Tex	2
N-Bru 6	Low	Athlete	backline-up design	herringbone sole	Gore-Tex	1

### 3) Brand and Design Attributes with Evaluation Criteria Condition

The profiles were same as Brand and Design Attribute Condition. However, evaluation criteria for design attribute were provided.



### Appendix 3 Profiles for Prediction of Product Quality Phase (First Step)

card No.	Brand	Design attribute	Sole Material	overall material
card 1	Highperf	frontline-up design	rubber flexi sole	Gore-Tex
card 2	Athlete	backline-up design	herringbone sole	Gore-Tex
card 3	Highperf	frontline-up design	herringbone sole	Gore-Tex
card 4	Highperf	backline-up design	herringbone sole	Gore-Tex
card 5	Highperf	backline-up design	rubber flexi sole	Gore-Tex
card 6	Athlete	frontline-up design	rubber flexi sole	Gore-Tex
card 7	Athlete	frontline-up design	herringbone sole	Gore-Tex
card 8	Athlete	backline-up design	rubber flexi sole	Gore-Tex

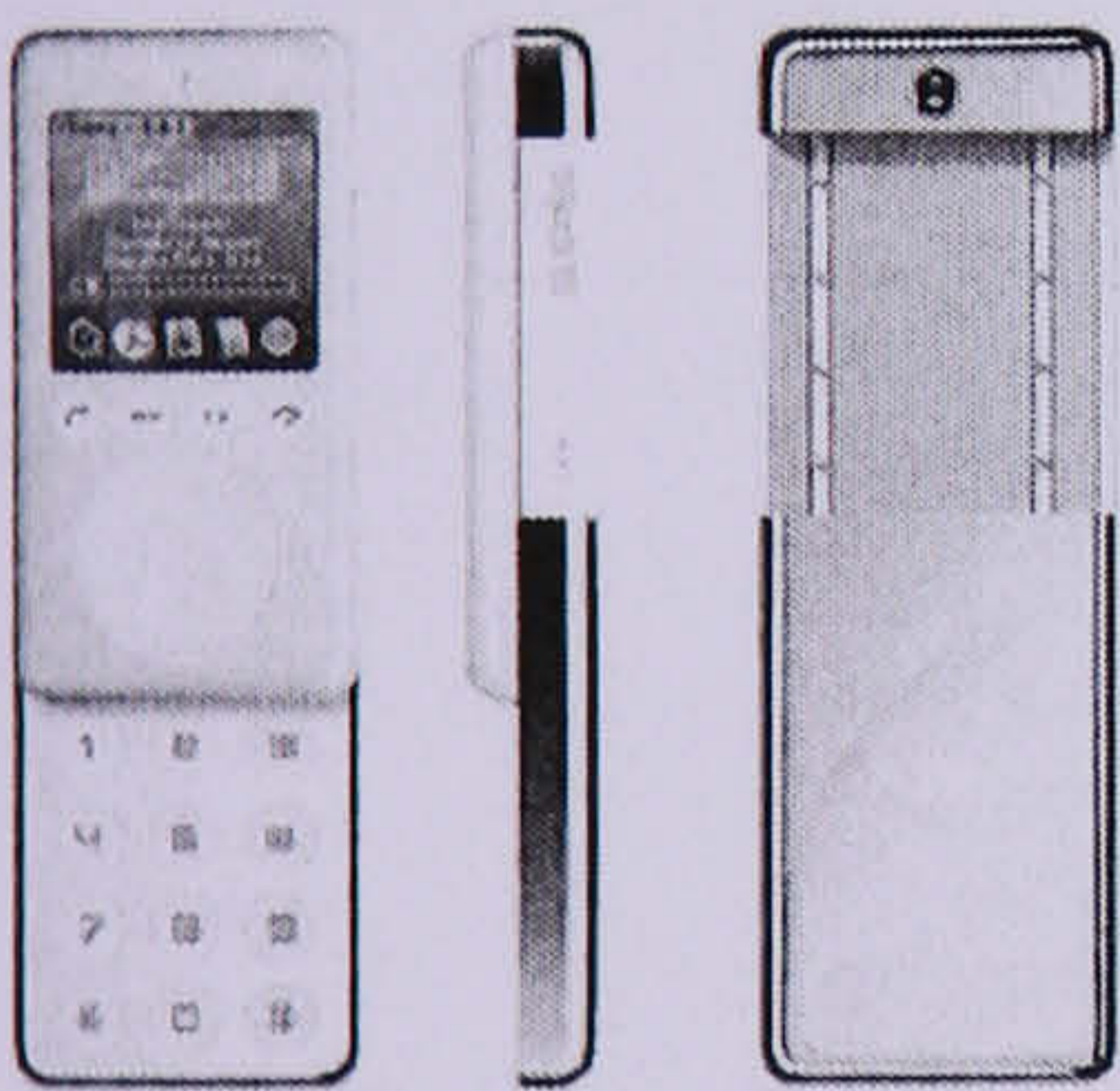
### Appendix 4 26 Designs of Mobile Phones (Second Step)



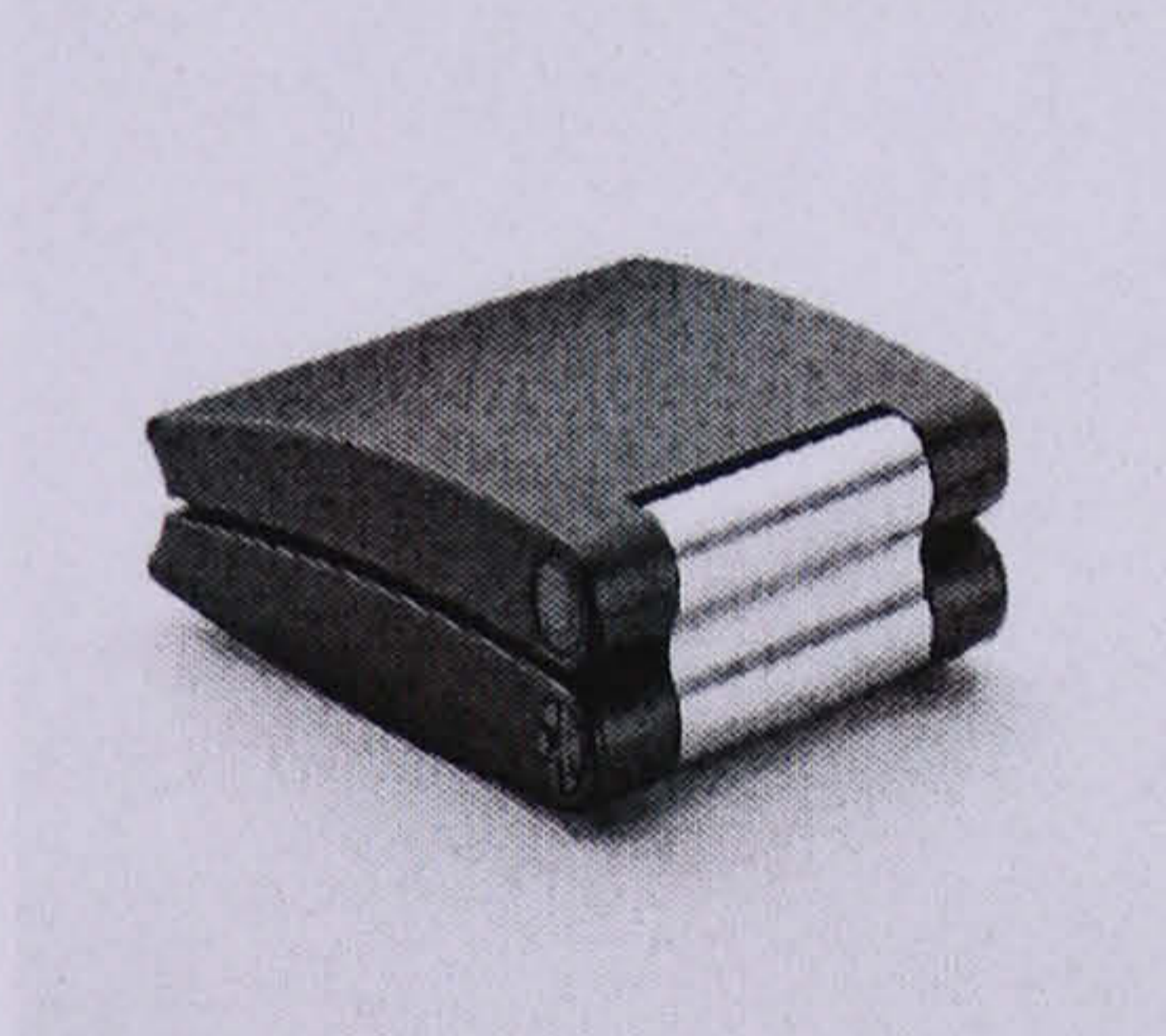
## Appendix 5 Means of Typicality of 26 Mobile Phone Designs (Second Step)

Stimuli	Mean	Std. Deviation	Stimuli	Mean	Std. Deviation
Stimuli 1	5.2000	3.26908	Stimuli 14	7.1600	2.20064
Stimuli 2	7.1400	1.85875	Stimuli 15	7.0200	1.92789
Stimuli 3	6.6800	2.15969	Stimuli 16	5.5600	2.43427
Stimuli 4	3.9500	2.24902	Stimuli 17	3.8500	2.72428
Stimuli 5	2.7000	2.00252	Stimuli 18	7.1500	2.18524
Stimuli 6	2.2100	2.06116	Stimuli 19	2.4600	2.28044
Stimuli 7	4.0200	2.16949	Stimuli 20	6.8200	2.10041
Stimuli 8	3.9200	2.10665	Stimuli 21	5.5700	2.83291
Stimuli 9	7.4400	1.70750	Stimuli 22	5.9900	2.07678
Stimuli 10	5.8600	2.10828	Stimuli 23	4.2000	2.35702
Stimuli 11	5.5200	2.46789	Stimuli 24	1.1200	1.60353
Stimuli 12	5.6400	3.00343	Stimuli 25	5.8800	2.17553
Stimuli 13	5.2600	3.30784	Stimuli 26	5.1000	2.01760

## Appendix 6 Three Selected Mobile Phone Designs as Stimuli (Second Step)



High typical design

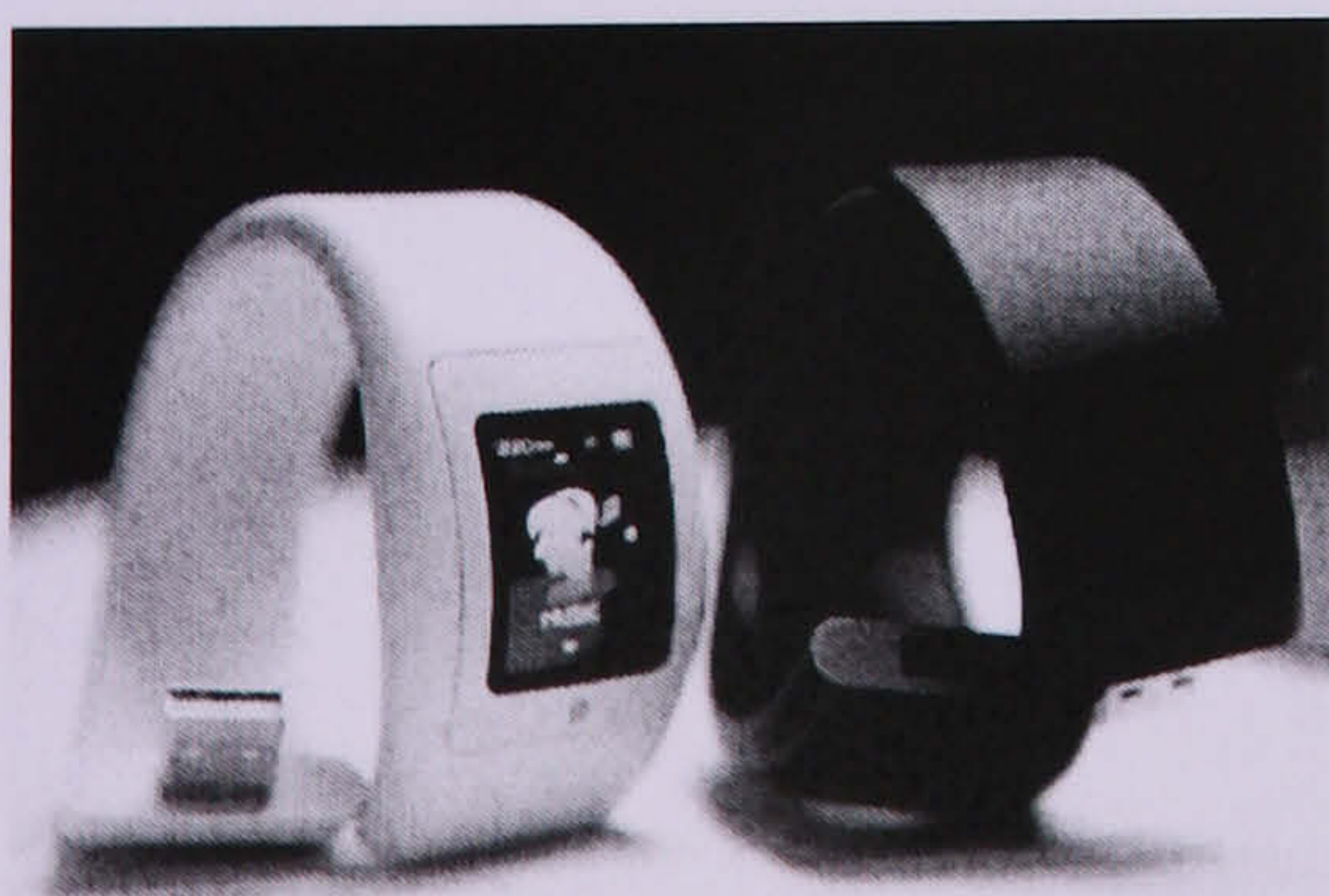


Medium typical design



Low typical design

## Appendix 7 Selected Designs for Validation Test (Second Step)

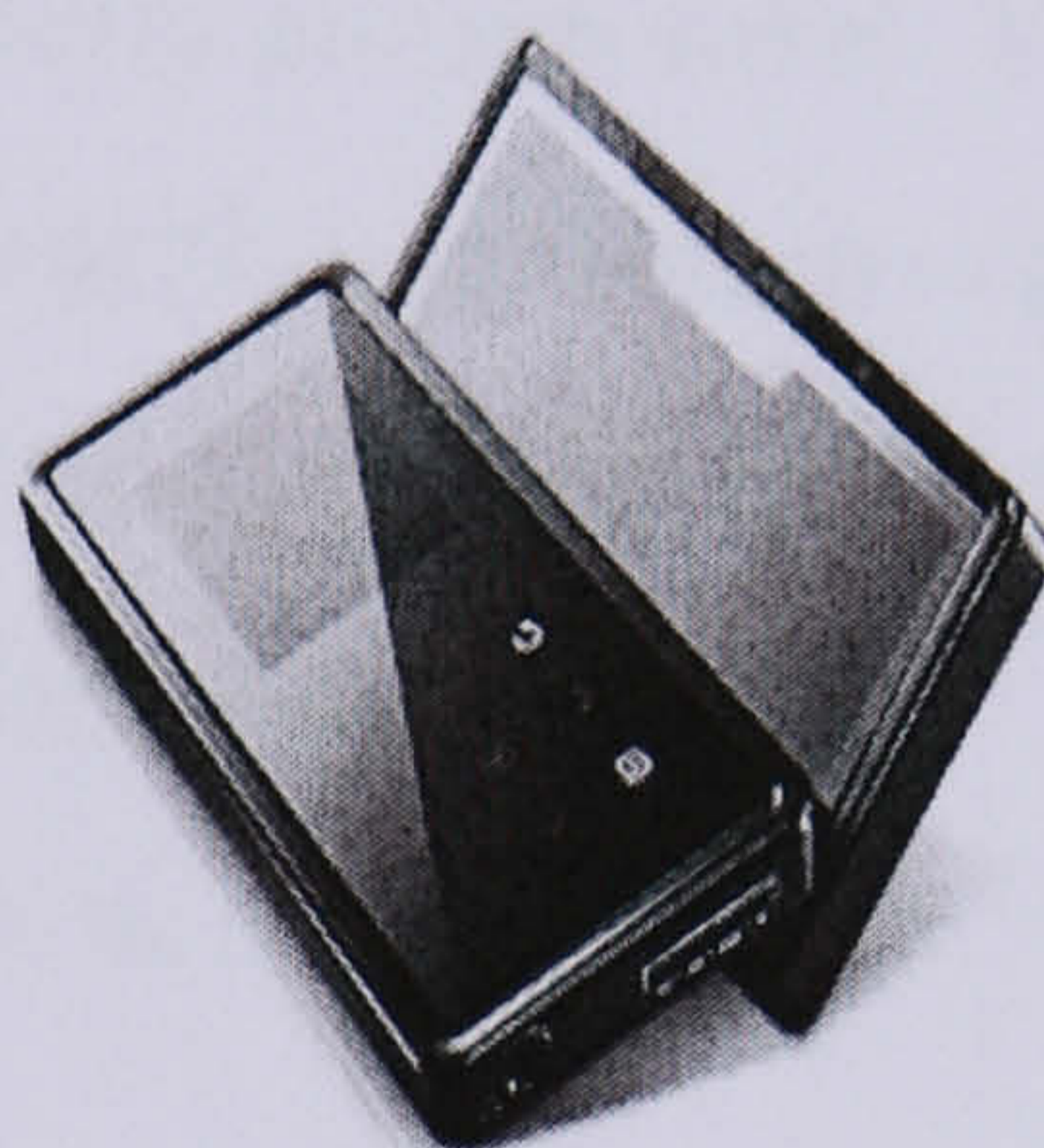
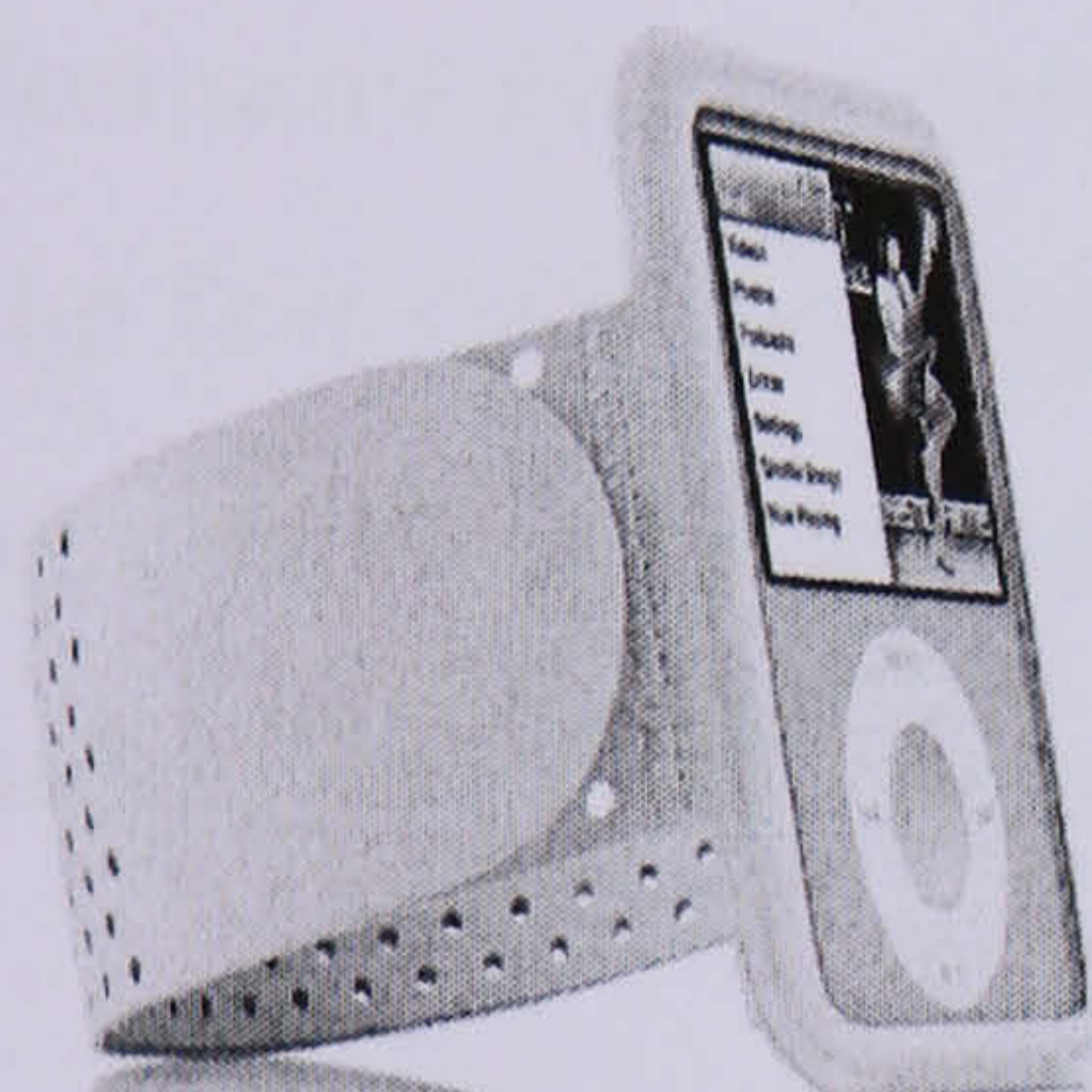


MP3



Toiletries

Appendix 8 Selected Designs for the Third Step



## Survey for New Products

A-□□□

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**This questionnaire is related to finding your thoughts about trainers.**

**Your responses will be strictly confidential. Your answers to this questionnaire are for survey administration purposes only. I hope you will take the few minutes required to complete this questionnaire to assist us in finding out about product design image.**

**Thanks for your cooperation.**

**If you have any questions, please contact the address as follows:**

**Phone: +44 (0)79 3224 8887**

**Email: [Kwang.na@brunel.ac.uk](mailto:Kwang.na@brunel.ac.uk)**

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◆ The following data relates to quality evaluation of two pairs of trainers in a Consumer Protection Service Centre. HIGHPERF and ATHLETIC are the trainer brands which are preferred by consumers in the U.K and these brands have a big market share in the market. Please read it through very carefully.

HIGHPERF Trainers	ATHLETIC Trainers
1 <sup>st</sup> in Consumer Quality Index (2005) Good Design Award 1 <sup>st</sup> in Consumer Satisfaction Index (2005) 1 <sup>st</sup> in Market Share of U.K (2005)	5 <sup>th</sup> in Consumer Quality Index (2005) 5 <sup>th</sup> in Consumer Satisfaction Index (2005) 5 <sup>th</sup> in Market Share of U.K

<Source : Consumer Protection Service Centre in U.K >

From now on, you will be looking at the slides describing the features and consumers' evaluation of two brands (HIGHPERF and ATHLETIC).

On the assumption that you have to buy trainers, use some information from the slides as much as possible to evaluate the quality of trainers.

Please, look at the slides very carefully and answer the questions in the questionnaire.

👉 Do Not Turn Over the Page Until You are Instructed 👈

**Part 1:** Two companies (Highperf and Athlete) are planning to launch new models in the market this summer. Please remind yourself of the information which you gained from the slides.

**Evaluate the quality of the new models of two companies using the information.**

**<MODEL 1>**

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---

Brand : HIGHPERF

Type of Design : Frontline-up Design

Type of Sole : Rubber Flexi Sole

Material : Gore-Tex

---

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What do you think about the quality of Model 1?

Very low quality		Neutral			Very good quality	
-3	-2	-1	0	+1	+2	+3

◆ Evaluate the quality of the new model using the information which you gained from slides.

<MODEL 2>

---

---

Brand : Athletic

Type of Design: Backline-up Design

Type of Sole : Herringbone Sole

Material : Gore-Tex

---

---

What do you think about the quality of Model 2?

Very low quality		Neutral			Very good quality	
-3	-2	-1	0	+1	+2	+3

◆ Evaluate the quality of the new model using the information which you received from the slides.

**<MODEL 3>**

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Brand : HIGHPERF

Type of Design : Frontline-up Design

Type of Sole : Herringbone Sole

Material : Gore-Tex

---

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What do you think about the quality of Model 3?

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Very low quality		Neutral			Very good quality	
-3	-2	-1	0	+1	+2	+3

---

---



◆ Evaluate the quality of the new model using the information from the slides.

<MODEL 4>

---

---

Brand : HIGHPERF

Type of Design : Backline-up Design

Type of Sole : Herringbone Sole

Material : Gore-Tex

---

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What do you think about the quality of Model 4?

Very low quality			Neutral	Very good quality		
-3	-2	-1	0	+1	+2	+3

◆ Evaluate the quality of the new model using the information from the slides.

<MODEL 5>

---

Brand : HIGHPERF

Type of Design : Backline-up Design

Type of Sole : Rubber Flexi Sole

Material : Gore-Tex

---

What do you think about the quality of Model 5?

Very low quality			Neutral	Very good quality		
-3	-2	-1	0	+1	+2	+3

◆ Evaluate the quality of the new model using the information from the slides.

<MODEL 6>

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---

Brand : Athletic

Type of Design : Frontline-up Design

Type of Bottom : Rubber Flexi Sole

Material : Gore-Tex

---

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What do you think about the quality of Model 6?

Very low quality			Neutral	Very good quality		
-3	-2	-1	0	+1	+2	+3

◆ Evaluate the quality of the new model using the information from the slides.

<MODEL 7>

---

---

Brand : Athletic

Type of Design : Frontline-up Design

Type of Sole : Herringbone Sole

Material : Gore-Tex

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What do you think about the quality of the Model 7?

Very low quality			Neutral	Very good quality		
-3	-2	-1	0	+1	+2	+3

◆ Evaluate the quality of the new model using the information from the slides.

<MODEL 8>

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Brand : Athletic

Type of Design : Backline-up Design

Type of Bottom : Rubber Flexi Sole

Material : Gore-Tex

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What do you think about the quality of Model 8?

Very low quality			Neutral	Very good quality		
-3	-2	-1	0	+1	+2	+3

**Part 2: The questions in this part are about your general thought of trainers.**

No.	Item	do not agree at all					strongly agree	
1	Trainers are one of my necessary items	①	②	③	④	⑤	⑥	⑦
2	Trainers are useful for me	①	②	③	④	⑤	⑥	⑦
3	I am usually interested in trainers	①	②	③	④	⑤	⑥	⑦

No.	Item	A little					A lot	
4	How much do you think you know about trainers?	①	②	③	④	⑤	⑥	⑦
5	How much do you think you know about trainers compared to your friends?	①	②	③	④	⑤	⑥	⑦
6	How much do you think you know about trainers compared to experts of mobile phones?	①	②	③	④	⑤	⑥	⑦

**Part 3: The questions in this part are about general information**

1. Sex : male \_\_\_ female \_\_\_

2. Age : (      )

3. Have you purchased a pair of trainers recently (within a year)  
Yes (    )    No (    )

If yes, when did you purchase the trainers? (      ) months ago

4. Nationality: (      )

## Survey for Design Image

---

**This questionnaire is related to finding your thoughts about the product design image.**

**Your responses will be strictly confidential. Your answers to the questionnaire are for survey administration purposes only. I hope you will take the few minutes required to complete this questionnaire to assist us in finding out about product design image.**

**Thanks for your cooperation.**

**If you have any questions, please contact the address as follows:**

**Phone: +44 (0)79 3224 8887**

**Email: [Kwang.na@brunel.ac.uk](mailto:Kwang.na@brunel.ac.uk)**

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**From now on, please remind yourself of your mobile phone. When you remind yourself of your mobile phone, try to concentrate on the product design of the mobile phone such as colours, shapes and forms.**

**You will be given 5 minutes to think about the design of your mobile phone.**

**Then, please write the words which you can associate with the design of your mobile phone product.**

**You can write a maximum of 10 words. You do not have to fill every blank; however, please write the words (as many as possible) which you associate with the design of your mobile phone.**

---

---

<b>No.</b>	<b>Words</b>
1	I could associate “ _____ ” with the design of my mobile phone
2	I could associate “ _____ ” with the design of my mobile phone
3	I could associate “ _____ ” with the design of my mobile phone
4	I could associate “ _____ ” with the design of my mobile phone
5	I could associate “ _____ ” with the design of my mobile phone
6	I could associate “ _____ ” with the design of my mobile phone
7	I could associate “ _____ ” with the design of my mobile phone
8	I could associate “ _____ ” with the design of my mobile phone
9	I could associate “ _____ ” with the design of my mobile phone
10	I could associate “ _____ ” with the design of my mobile phone



**Part 2: The questions in this part are related to your thoughts about the mobile phone. Please tick the number which corresponds with your opinion.**

No.	Item	do not agree at all						strongly agree
1	The mobile phone is one of my necessary items	①	②	③	④	⑤	⑥	⑦
2	The mobile phone is useful for me	①	②	③	④	⑤	⑥	⑦
3	I am usually interested in mobile phones	①	②	③	④	⑤	⑥	⑦

No.	Item	A little						A lot
4	How much do you think you know about mobile phones?	①	②	③	④	⑤	⑥	⑦
5	How much do you think you know about mobile phones compared to your friends?	①	②	③	④	⑤	⑥	⑦
6	How much do you think you know about mobile phones compared to experts of mobile phones?	①	②	③	④	⑤	⑥	⑦

**Part 3: The questions in this part are about your general information**

1. Sex : male\_\_\_ female\_\_\_
2. Age : (      )
3. Nationality: (      )

## Survey for Design Image

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**This questionnaire is related to finding your thoughts about product design image.**

**Your responses will be strictly confidential. The answer on your questionnaire is for survey administration purposes only. I hope you will take the few minutes required to complete this questionnaire to assist us in finding out about product design image.**

**Thanks for your cooperation.**

**If you have any questions, please contact the address as follows**

**Phone: +44 (0)79 3224 8887**

**Email: [Kwang.na@brunel.ac.uk](mailto:Kwang.na@brunel.ac.uk)**

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### **Part 1: The questions in this part are about your general information**

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1. Sex : male\_\_\_ female\_\_\_
2. Age : (      )
3. Are you using a mobile phone?    Yes (    )    No (    )  
    If yes, when did you get your mobile phone? (      ) months ago
4. How many times have you changed your mobile phone? (      ) times
5. Nationality: (      )

## PART 2

From now on, you will see some photos of the Mobile Phone. When you see these photos, please concentrate on the product design such as colours, shapes and forms. You can see 25 types of mobile phone design. After watching each mobile phone design, you will be given a few minutes to think about the design of each mobile phone.

In this part, we would like you to rate representativeness of the mobile phone. Each design is on a 0-10 point scale. A 10 means that you feel the design of the mobile phone is a very representative design of the mobile phone; a 0 means you feel the design is a very unrepresentative design of the mobile phone. A 5 means you feel the design of the mobile phone is a moderately representative design of the mobile phone. Use other numbers of the 0-10 point scale to indicate your judgments.

<b>Not at all representative</b>	<b>Moderate</b>	<b>Very representative</b>
0    1    2    3	4    5    6    7	8    9    10

Design NO.	Rate of Representativeness	Design NO.	Rate of Representativeness	Design NO.	Rate of Representativeness
Design 1		Design 10		Design 19	
Design 2		Design 11		Design 20	
Design 3		Design 12		Design 21	
Design 4		Design 13		Design 22	
Design 5		Design 14		Design 23	
Design 6		Design 15		Design 24	
Design 7		Design 16		Design 25	
Design 8		Design 17			
Design 9		Design 18			

## Survey for Design Image

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**This questionnaire is related to finding your thoughts about the product design image.**

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## PART 1

**From now on, you will see a photo of a mobile phone. When you see this photo, please concentrate on the product design such as colour, size, shape and form. After looking at the mobile phone design, you will be given a few minutes to think about the design of mobile phone. Then, answer the questions below.**

No.	Item	do not agree at all	strongly agree
1	This design is polished	① ② ③ ④ ⑤ ⑥ ⑦	
2	This design is new	① ② ③ ④ ⑤ ⑥ ⑦	
3	This design is attractive	① ② ③ ④ ⑤ ⑥ ⑦	
4	This design is tasteful	① ② ③ ④ ⑤ ⑥ ⑦	
5	This design is dignified	① ② ③ ④ ⑤ ⑥ ⑦	
6	This design is beautiful	① ② ③ ④ ⑤ ⑥ ⑦	
7	This design is well-balanced	① ② ③ ④ ⑤ ⑥ ⑦	
8	This design is fabulous	① ② ③ ④ ⑤ ⑥ ⑦	
9	This design is progressive	① ② ③ ④ ⑤ ⑥ ⑦	
10	This design is fascinating	① ② ③ ④ ⑤ ⑥ ⑦	
11	This design is urbanized	① ② ③ ④ ⑤ ⑥ ⑦	
12	This design is sensual	① ② ③ ④ ⑤ ⑥ ⑦	
13	This design is blunt	① ② ③ ④ ⑤ ⑥ ⑦	
14	This design is innovative	① ② ③ ④ ⑤ ⑥ ⑦	
15	This design is unique	① ② ③ ④ ⑤ ⑥ ⑦	
16	This design is infrequent	① ② ③ ④ ⑤ ⑥ ⑦	
17	This design is good	① ② ③ ④ ⑤ ⑥ ⑦	
18	This design is modernistic	① ② ③ ④ ⑤ ⑥ ⑦	
19	This design is unfamiliar	① ② ③ ④ ⑤ ⑥ ⑦	
20	This design is uncommon	① ② ③ ④ ⑤ ⑥ ⑦	
21	This design is inconvenient	① ② ③ ④ ⑤ ⑥ ⑦	
22	This design is exclusive	① ② ③ ④ ⑤ ⑥ ⑦	
23	This design is rare	① ② ③ ④ ⑤ ⑥ ⑦	
24	This design contemporary	① ② ③ ④ ⑤ ⑥ ⑦	
25	This design is sensational	① ② ③ ④ ⑤ ⑥ ⑦	
26	This design is contrasting	① ② ③ ④ ⑤ ⑥ ⑦	

No.	Item	do not agree at all						strongly agree
27	This design is perky	①	②	③	④	⑤	⑥	⑦
28	This design is heavy	①	②	③	④	⑤	⑥	⑦
29	This design is emotional	①	②	③	④	⑤	⑥	⑦
30	This design is neat	①	②	③	④	⑤	⑥	⑦
31	This design is garish	①	②	③	④	⑤	⑥	⑦
32	This design is sophisticated	①	②	③	④	⑤	⑥	⑦
33	This design is cosmopolitan	①	②	③	④	⑤	⑥	⑦
34	This design is westernized	①	②	③	④	⑤	⑥	⑦
35	This design is delicate	①	②	③	④	⑤	⑥	⑦
36	This design is prestige	①	②	③	④	⑤	⑥	⑦
37	This design is practical	①	②	③	④	⑤	⑥	⑦
38	This design is dynamic	①	②	③	④	⑤	⑥	⑦
39	This design is elegant	①	②	③	④	⑤	⑥	⑦
40	This design is individualized	①	②	③	④	⑤	⑥	⑦
41	This design is applicable	①	②	③	④	⑤	⑥	⑦
42	This design is cold	①	②	③	④	⑤	⑥	⑦
43	This design is concise	①	②	③	④	⑤	⑥	⑦
44	This design is untangle	①	②	③	④	⑤	⑥	⑦
45	This design is uncomplicated	①	②	③	④	⑤	⑥	⑦
46	This design is masculine	①	②	③	④	⑤	⑥	⑦
47	This design is feminine	①	②	③	④	⑤	⑥	⑦
48	This design is classical	①	②	③	④	⑤	⑥	⑦
49	This design is exceptional	①	②	③	④	⑤	⑥	⑦
50	This design is adorable	①	②	③	④	⑤	⑥	⑦
51	This design is curved	①	②	③	④	⑤	⑥	⑦
52	This design is stylish	①	②	③	④	⑤	⑥	⑦
53	This design is active	①	②	③	④	⑤	⑥	⑦
54	This design is charming	①	②	③	④	⑤	⑥	⑦
55	This design is cool	①	②	③	④	⑤	⑥	⑦
56	This design is fresh	①	②	③	④	⑤	⑥	⑦
57	This design is simple	①	②	③	④	⑤	⑥	⑦
58	This design is noble	①	②	③	④	⑤	⑥	⑦
59	This design is tiny	①	②	③	④	⑤	⑥	⑦
60	This design is useful	①	②	③	④	⑤	⑥	⑦

No.	Item	do not agree at all	strongly agree
61	This design is functional	① ② ③ ④ ⑤ ⑥ ⑦	
62	This design is complex	① ② ③ ④ ⑤ ⑥ ⑦	
63	This design is amiable	① ② ③ ④ ⑤ ⑥ ⑦	
64	This design is stable	① ② ③ ④ ⑤ ⑥ ⑦	
65	This design is pretty	① ② ③ ④ ⑤ ⑥ ⑦	
66	This design is handy	① ② ③ ④ ⑤ ⑥ ⑦	
67	This design is round	① ② ③ ④ ⑤ ⑥ ⑦	
68	This design is thin	① ② ③ ④ ⑤ ⑥ ⑦	
69	This design is different	① ② ③ ④ ⑤ ⑥ ⑦	
70	This design is best	① ② ③ ④ ⑤ ⑥ ⑦	
71	This design is luxurious	① ② ③ ④ ⑤ ⑥ ⑦	
72	This design is excellent	① ② ③ ④ ⑤ ⑥ ⑦	

No.	Item	do not agree at all	strongly agree
1	I like this design	① ② ③ ④ ⑤ ⑥ ⑦	
2	I have a favourable feeling to this design	① ② ③ ④ ⑤ ⑥ ⑦	
3	I have a positive feeling about this design	① ② ③ ④ ⑤ ⑥ ⑦	

**Part 2: The questions in this part are related to your thoughts about the mobile phone. Please tick the number which corresponds with your opinion.**

No.	Item	do not agree at all	strongly agree
1	The mobile phone is one of my necessary items	① ② ③ ④ ⑤ ⑥ ⑦	
2	The mobile phone is useful for me	① ② ③ ④ ⑤ ⑥ ⑦	
3	I am usually interested in mobile phones	① ② ③ ④ ⑤ ⑥ ⑦	

No.	Item	A little	A lot
4	How much do you think you know about mobile phones?	① ② ③ ④ ⑤ ⑥ ⑦	
5	How much do you think you know about mobile phones compared to your friends?	① ② ③ ④ ⑤ ⑥ ⑦	
6	How much do you think you know about mobile phones compared to experts of mobile phones?	① ② ③ ④ ⑤ ⑥ ⑦	

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**Part 3: The questions in this part are about your general information**

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1. Sex : male\_\_\_ female\_\_\_
2. Age : (      )
3. Are you using a mobile phone?    Yes (    )    No (    )
4. How many times have you changed your mobile phone? (      ) times
5. Nationality: (      )



## Survey for Product Image

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**This questionnaire is related to finding thoughts of product categories.**

**Your responses will be strictly confidential. Your answers to the questionnaire are for survey administration purposes only. I hope you will take the few minutes required to complete this questionnaire to assist us in finding out about global brands awareness.**

**Thanks for your cooperation.**

**If you have any questions, please contact the address as follows:**

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**Email: [Kwang.na@brunel.ac.uk](mailto:Kwang.na@brunel.ac.uk)**

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**Part 1: The questions in this part are about your general information**

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1. Sex : male\_\_\_ female\_\_\_
2. Age : (      )
3. Nationality: (      )

**Part 2: The questions in this part are related to your thoughts about each product category. Please tick on the number which is in accord with your opinion.**

No.	Item	do not agree at all					strongly agree
1	Computers are functional products	①	②	③	④	⑤	⑥ ⑦
2	Toothpastes are functional products	①	②	③	④	⑤	⑥ ⑦
3	Mp3 players are functional products	①	②	③	④	⑤	⑥ ⑦
4	Jeans are functional products	①	②	③	④	⑤	⑥ ⑦
5	Cosmetics are functional products	①	②	③	④	⑤	⑥ ⑦
6	Toiletries are functional products	①	②	③	④	⑤	⑥ ⑦
7	Automobiles are functional products	①	②	③	④	⑤	⑥ ⑦
8	Athletic shoes are functional products	①	②	③	④	⑤	⑥ ⑦
9	Pain relievers are functional products	①	②	③	④	⑤	⑥ ⑦
10	Beverages are functional products	①	②	③	④	⑤	⑥ ⑦
11	Mobile phones are functional products	①	②	③	④	⑤	⑥ ⑦
12	Computers are products with which I can express myself	①	②	③	④	⑤	⑥ ⑦
13	Toothpastes are products with which I can express myself	①	②	③	④	⑤	⑥ ⑦
14	MP3 players are products with which I can express myself	①	②	③	④	⑤	⑥ ⑦
15	Jeans are products with which I can express myself	①	②	③	④	⑤	⑥ ⑦
16	Cosmetics are products with which I can express myself	①	②	③	④	⑤	⑥ ⑦
17	Toiletries are products with which I can express myself	①	②	③	④	⑤	⑥ ⑦
18	Automobiles are products with which I can express myself	①	②	③	④	⑤	⑥ ⑦
19	Athletic shoes are products with which I can express myself	①	②	③	④	⑤	⑥ ⑦
20	Pain relievers are products with which I can express myself	①	②	③	④	⑤	⑥ ⑦
21	Beverages are products with which I can express myself	①	②	③	④	⑤	⑥ ⑦
22	Mobile Phones are products with which I can express myself	①	②	③	④	⑤	⑥ ⑦

## Survey for Design Image

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**This questionnaire is related to finding your thoughts about the product design image.**

**Your responses will be strictly confidential. Your answers to the questionnaire are for survey administration purposes only. I hope you will take the few minutes required to complete this questionnaire to assist us in finding out about product design image.**

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PART 1

**From now on, you can see a photo of mp3 players. When you see this photo, please concentrate on the product design such as colour, size, shape and form. After watching the mp3 player design, you will be given a few minutes to think about the design of the mp3 player. Then, answer the questions below.**

No.	Item	do not agree at all	strongly agree
1	This design is polished	① ② ③ ④ ⑤ ⑥ ⑦	
2	This design is luxurious	① ② ③ ④ ⑤ ⑥ ⑦	
3	This design is stylish	① ② ③ ④ ⑤ ⑥ ⑦	
4	This design is tasteful	① ② ③ ④ ⑤ ⑥ ⑦	
5	This design is dignified	① ② ③ ④ ⑤ ⑥ ⑦	
6	This design is charming	① ② ③ ④ ⑤ ⑥ ⑦	
7	This design is well-balanced	① ② ③ ④ ⑤ ⑥ ⑦	
8	This design is fabulous	① ② ③ ④ ⑤ ⑥ ⑦	
9	This design is active	① ② ③ ④ ⑤ ⑥ ⑦	
10	This design is fascinating	① ② ③ ④ ⑤ ⑥ ⑦	
11	This design is urbanized	① ② ③ ④ ⑤ ⑥ ⑦	
12	This design is sensual	① ② ③ ④ ⑤ ⑥ ⑦	
13	This design is cool	① ② ③ ④ ⑤ ⑥ ⑦	
14	This design is innovative	① ② ③ ④ ⑤ ⑥ ⑦	
15	This design is different	① ② ③ ④ ⑤ ⑥ ⑦	
16	This design is infrequent	① ② ③ ④ ⑤ ⑥ ⑦	
17	This design is complex	① ② ③ ④ ⑤ ⑥ ⑦	
18	This design is modernistic	① ② ③ ④ ⑤ ⑥ ⑦	
19	This design is unfamiliar	① ② ③ ④ ⑤ ⑥ ⑦	
20	This design is uncommon	① ② ③ ④ ⑤ ⑥ ⑦	
21	This design is inconvenient	① ② ③ ④ ⑤ ⑥ ⑦	
22	This design is exclusive	① ② ③ ④ ⑤ ⑥ ⑦	
23	This design is rare	① ② ③ ④ ⑤ ⑥ ⑦	
24	This design contemporary	① ② ③ ④ ⑤ ⑥ ⑦	
25	This design is sensational	① ② ③ ④ ⑤ ⑥ ⑦	
26	This design is contrasting	① ② ③ ④ ⑤ ⑥ ⑦	

No.	Item	do not agree at all						strongly agree
27	This design is perky	①	②	③	④	⑤	⑥	⑦
28	This design is amiable	①	②	③	④	⑤	⑥	⑦
29	This design is emotional	①	②	③	④	⑤	⑥	⑦
30	This design is neat	①	②	③	④	⑤	⑥	⑦
31	This design is noble	①	②	③	④	⑤	⑥	⑦
32	This design is sophisticated	①	②	③	④	⑤	⑥	⑦
33	This design is cosmopolitan	①	②	③	④	⑤	⑥	⑦
34	This design is westernized	①	②	③	④	⑤	⑥	⑦
35	This design is delicate	①	②	③	④	⑤	⑥	⑦
36	This design is handy	①	②	③	④	⑤	⑥	⑦
37	This design is practical	①	②	③	④	⑤	⑥	⑦
38	This design is useful	①	②	③	④	⑤	⑥	⑦
39	This design is elegant	①	②	③	④	⑤	⑥	⑦
40	This design is individualized	①	②	③	④	⑤	⑥	⑦
41	This design is applicable	①	②	③	④	⑤	⑥	⑦
42	This design is simple	①	②	③	④	⑤	⑥	⑦
43	This design is concise	①	②	③	④	⑤	⑥	⑦
44	This design is untangle	①	②	③	④	⑤	⑥	⑦
45	This design is uncomplicated	①	②	③	④	⑤	⑥	⑦
46	This design is stable	①	②	③	④	⑤	⑥	⑦
47	This design is feminine	①	②	③	④	⑤	⑥	⑦
48	This design is fresh	①	②	③	④	⑤	⑥	⑦
49	This design is exceptional	①	②	③	④	⑤	⑥	⑦
50	This design is adorable	①	②	③	④	⑤	⑥	⑦
51	This design is tiny	①	②	③	④	⑤	⑥	⑦

No.	Item	do not agree at all						strongly agree
1	I like this design	①	②	③	④	⑤	⑥	⑦
2	I have a favourable feeling to this design	①	②	③	④	⑤	⑥	⑦
3	I have a positive feeling to this design	①	②	③	④	⑤	⑥	⑦

**Part 2: The questions in this part are related to your thoughts about mp3 player. Please tick on the number which corresponds with your opinion.**

No.	Item	do not agree at all						strongly agree
1	The mp3 player is one of my necessary items	①	②	③	④	⑤	⑥	⑦
2	The mp3 player is useful for me	①	②	③	④	⑤	⑥	⑦
3	I am usually interested in mp3 players	①	②	③	④	⑤	⑥	⑦

No.	Item	A little			A lot			
4	How much do you think you know about mp3 players?	①	②	③	④	⑤	⑥	⑦
5	How much do you think you know about mp3 players compared to your friends?	①	②	③	④	⑤	⑥	⑦
6	How much do you think you know about mp3 players compared to experts of mobile phones?	①	②	③	④	⑤	⑥	⑦

**Part 3: The questions in this part are about your general information**

1. Sex : male\_\_\_ female\_\_\_
2. Age : (      )
3. Have you purchased a mp3 player?    Yes (    )    No (    )
4. Nationality: (            )

## Survey for Design Image

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This questionnaire is related to finding your thoughts about the product design image.

Your responses will be strictly confidential. Your answers to the questionnaire are for survey administration purposes only. I hope you will take the few minutes required to complete this questionnaire to assist us in finding out about product design image.

Thanks for your cooperation.

If you have any questions, please contact the address as follows:

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Email: [Kwang.na@brunel.ac.uk](mailto:Kwang.na@brunel.ac.uk)

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### Part 1: The questions in this part are about your general information

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1. Sex : male \_\_\_ female \_\_\_
2. Age : (      )
3. Do you use perfume? Yes (   ) No (   )  
If yes, when was the last time you purchased perfume? (      ) months ago
4. How often do you purchase perfume? (      ) months
5. Nationality: (      )

## PART 2

**From now on, you will see a photo of a perfume bottle which will be launched in the Korean market. When you see this photo, please concentrate on the product design such as colour, size, shape and form. After looking at the perfume bottle design, you will be given a few minutes to think about the design of a perfume bottle. Then, answer the questions below.**

No.	Item	do not agree at all	strongly agree
1	This design is polished	① ② ③ ④ ⑤ ⑥ ⑦	
2	This design is luxurious	① ② ③ ④ ⑤ ⑥ ⑦	
3	This design is stylish	① ② ③ ④ ⑤ ⑥ ⑦	
4	This design is tasteful	① ② ③ ④ ⑤ ⑥ ⑦	
5	This design is dignified	① ② ③ ④ ⑤ ⑥ ⑦	
6	This design is charming	① ② ③ ④ ⑤ ⑥ ⑦	
7	This design is well-balanced	① ② ③ ④ ⑤ ⑥ ⑦	
8	This design is fabulous	① ② ③ ④ ⑤ ⑥ ⑦	
9	This design is modernistic	① ② ③ ④ ⑤ ⑥ ⑦	
10	This design is fascinating	① ② ③ ④ ⑤ ⑥ ⑦	
11	This design is urbanized	① ② ③ ④ ⑤ ⑥ ⑦	
12	This design is sensual	① ② ③ ④ ⑤ ⑥ ⑦	
13	This design is cool	① ② ③ ④ ⑤ ⑥ ⑦	
14	This design is innovative	① ② ③ ④ ⑤ ⑥ ⑦	
15	This design is different	① ② ③ ④ ⑤ ⑥ ⑦	
16	This design is infrequent	① ② ③ ④ ⑤ ⑥ ⑦	
17	This design is unfamiliar	① ② ③ ④ ⑤ ⑥ ⑦	
18	This design is uncommon	① ② ③ ④ ⑤ ⑥ ⑦	
19	This design is exclusive	① ② ③ ④ ⑤ ⑥ ⑦	
20	This design is rare	① ② ③ ④ ⑤ ⑥ ⑦	
21	This design is sensational	① ② ③ ④ ⑤ ⑥ ⑦	
22	This design is contrasting	① ② ③ ④ ⑤ ⑥ ⑦	
23	This design is fresh	① ② ③ ④ ⑤ ⑥ ⑦	
24	This design is exceptional	① ② ③ ④ ⑤ ⑥ ⑦	
25	This design is adorable	① ② ③ ④ ⑤ ⑥ ⑦	
26	This design is tiny	① ② ③ ④ ⑤ ⑥ ⑦	



No.	Item	do not agree at all					strongly agree
27	This design is perky	①	②	③	④	⑤	⑥ ⑦
28	This design is amiable	①	②	③	④	⑤	⑥ ⑦
29	This design is emotional	①	②	③	④	⑤	⑥ ⑦
30	This design is neat	①	②	③	④	⑤	⑥ ⑦
31	This design is noble	①	②	③	④	⑤	⑥ ⑦
32	This design is sophisticated	①	②	③	④	⑤	⑥ ⑦
33	This design is elegant	①	②	③	④	⑤	⑥ ⑦
34	This design is westernized	①	②	③	④	⑤	⑥ ⑦
35	This design is delicate	①	②	③	④	⑤	⑥ ⑦
36	This design is handy	①	②	③	④	⑤	⑥ ⑦
37	This design is practical	①	②	③	④	⑤	⑥ ⑦
38	This design is useful	①	②	③	④	⑤	⑥ ⑦
39	This design is applicable	①	②	③	④	⑤	⑥ ⑦
40	This design is simple	①	②	③	④	⑤	⑥ ⑦
41	This design is untangle	①	②	③	④	⑤	⑥ ⑦
42	This design is uncomplicated	①	②	③	④	⑤	⑥ ⑦
43	This design is stable	①	②	③	④	⑤	⑥ ⑦

**Part 3: The questions in this part are related to your overall thoughts about the design of a perfume bottle. Please tick on the number which corresponds with your opinion.**

No.	Item	do not agree at all					strongly agree
1	I will purchase this perfume because of the design	①	②	③	④	⑤	⑥ ⑦
2	I can pay a premium price for the design of the perfume bottle	①	②	③	④	⑤	⑥ ⑦

**Part 4: The questions in this part are related to your overall thought about a brand (CHANEL) of perfume in Korea. You will be given a few minutes to think about brand image of a CHANEL brand of perfume. Please think how you would characterize each brand image. And then, answer the questions below.**

No.	Item	do not agree at all	strongly agree
1	I think the CHANEL brand has the image that CHANEL solves the problems which I have	① ② ③ ④ ⑤ ⑥ ⑦	
2	I think the CHANEL brand has the image that CHANEL solves the problems which can happen in the future	① ② ③ ④ ⑤ ⑥ ⑦	
3	I think the CHANEL brand has the image that CHANEL provides functional benefits	① ② ③ ④ ⑤ ⑥ ⑦	
4	I think the CHANEL brand has the image that CHANEL can convey my status to other people	① ② ③ ④ ⑤ ⑥ ⑦	
5	I think the CHANEL brand has the image that CHANEL gets social approval	① ② ③ ④ ⑤ ⑥ ⑦	
6	I think the CHANEL brand has the image that CHANEL gets accreditation from other people	① ② ③ ④ ⑤ ⑥ ⑦	
7	I think the CHANEL brand has the image that CHANEL provides variety	① ② ③ ④ ⑤ ⑥ ⑦	
8	I think the CHANEL brand has the image that CHANEL provides stimulation	① ② ③ ④ ⑤ ⑥ ⑦	
9	I think the CHANEL brand has the image that CHANEL provides sensory gratification	① ② ③ ④ ⑤ ⑥ ⑦	

No.	Item	do not agree at all	strongly agree
1	I will purchase toiletries of CHANEL	① ② ③ ④ ⑤ ⑥ ⑦	
2	I can pay a premium price for the CHANEL brand	① ② ③ ④ ⑤ ⑥ ⑦	

**Part 5: The questions in this part are related to your thought about toiletries. Please tick on the number which corresponds with your opinion.**

No.	Item	do not agree at all	strongly agree
1	Toiletries are one of my necessary items	① ② ③ ④ ⑤ ⑥ ⑦	
2	Toiletries are useful for me	① ② ③ ④ ⑤ ⑥ ⑦	
3	I am usually interested in toiletries	① ② ③ ④ ⑤ ⑥ ⑦	

No.	Item	A little	A lot
4	How much do you think you know about toiletries?	① ② ③ ④ ⑤ ⑥ ⑦	
5	How much do you think you know about toiletries compared to your friends?	① ② ③ ④ ⑤ ⑥ ⑦	
6	How much do you think you know about toiletries compared to experts of perfume?	① ② ③ ④ ⑤ ⑥ ⑦	

No.	Item	do not agree at all	strongly agree
7	Toiletries is a functional product	① ② ③ ④ ⑤ ⑥ ⑦	
8	Toiletries is a product with which I can express myself	① ② ③ ④ ⑤ ⑥ ⑦	