FORMATION OF BRAND EQUITY IN SMARTPHONES

A STUDY IN NEPAL

A Research dissertation submitted to

Kathmandu University School of Management

in partial fulfillment of the requirements for the

Degree of Master of Philosophy (MPhil) in Management

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DECLARATION

I hereby declare that this thesis entitled *Formation of Brand Equity in Smartphones: A Study in Nepal* embodies the result of an original research work I carried out in partial fulfillment of the requirements for the degree of Master of Philosophy (MPhil) in Management of the Kathmandu University and that this dissertation has not been submitted for candidature for any other degree.

Ramesh Shrestha

October, 2017

RECOMMENDATION

This is to certify that Ramesh Shrestha has completed his research work on *Formation of Brand Equity in Smartphones: A Study in Nepal* under my supervision and that his dissertation embodies the result of his investigation conducted during the period he worked as an MPhil candidate of the School of Management. The dissertation is of the standard expected of a candidate for the degree of MPhil in Management and has been prepared in the prescribed format of the School of Management. The dissertation is forwarded for evaluation.

Dissertation Advisory Committee

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APPROVAL

We have conducted the viva-voce examination of the dissertation *Formation of Brand Equity in Smartphones: A study in Nepal* by Ramesh Shrestha and found the dissertation to be original work of the candidate and written according to the prescribed format of the School of Management. We approve the dissertation as the partial fulfillment of the requirements for the degree of Master of Philosophy (MPhil) in Management.

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ABSTRACT

Many researchers have conducted various empirical studies to find the formation process of customer-based brand equity. Customer-based brand equity has recognized important attention where consumers enable to have right experience towards the products and services. The smartphone industry is competitive with new product proliferation and technological changes; therefore there is a need to examine how brand equity is formed in smartphones. But in smartphones, the result might be different.

This research was conducted to find the process of brand equity formation in smartphones. The study was conducted in two phases – pretest and main study. The pretest was analyzed with 100 samples to filter the initial instrument through exploratory factor analysis and reliability test. The main study was conducted using confirmatory factor analysis and structural equation modeling with 580 samples.

From the study, it was found that brand equity is formed as a process consisting of marketing programs, followed by brand equity dimensions. Further, it was found that brand preference is vital factor for creating brand loyalty and brand repurchase. On the contrary, brand image has adverse effect on brand loyalty and brand repurchase. This concludes that brand image is not sufficient for creating brand loyalty and brand repurchase and can be achieved only through brand preference. Marketers need to take care of these factors while devising marketing plans.

Keywords: Smartphones, customer-based brand equity, confirmatory factor analysis, structural equation modeling, brand preference

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ABBREVIATIONS

AVE	Average Variance Extracted
CBBE	Customer Based Brand Equity
CFA	Confirmatory Factor Analysis
EFA	Exploratory Factor Analysis
GSM	Global System for Mobile Communication
IDC	International Data Corporation
NTA	Nepal Telecommunication Authority
SEM	Structural Equation Modeling
SPSS	Statistical Package for the Social Sciences

CHAPTER I

INTRODUCTION

The worldwide smartphone market grew 13.0% year over year in 2015 Q2, with 341.5 million shipments (International Data Corporation, 2015). This growth is primarily due to gains experienced in emerging markets. A smartphone is a mobile electronic device which runs an advanced operating system that is open to installing new applications, is always connected to the internet, and which provides very diverse functionality to the consumer (Cromar, 2010).

As with many electronics industries, the smartphone industry is a relatively young, rapidly changing and highly competitive (Canalys, 2011). Cromar (2010) states new and distinctive products are being developed continuously, and released almost weekly. He further states that due to this reason, the landscape of the market can change dramatically from one year to the next or even from one month to the next. According to GSMA Global Mobile Economy Report (2015), the world is seeing a rapid technology migration to both higher speed mobile broadband networks and the increased adoption of smartphones and other connected devices.

The smartphone market is rapidly changing with constant product introductions. It is characterized by quickly evolving technology and designs, short product life cycles, aggressive pricing, rapid imitation of product and technological advancements, and highly price sensitive consumers (Cromar, 2010). He further states that no one firm in the market has sufficient market share to control prices, resulting is strong rivalry and competitive pricing. The barriers to entry are high due to the

existence of patents, high fixed costs, economies of scale, regulation, and brand equity (Cromar, 2010).

Naturally, the increasing competition has had major advantages for the customer: increased choice, greater value for the money, and augmented levels of service (Kandampully & Suhartanto, 2000). On the other hand, in the competitive and shifting market environment with an abundance of new brands, smartphone makers have to redefine and reinforce their brand equity in order to enable customers to distinguish their smartphones from among their competitors. Hence, a strong competitiveness of the brand or company has been more important and the need for effective marketing strategies is evident. In this context, well-defined brand equity in the smartphone business is an essential prerequisite to thrive and survive in a rapidly growing global market.

Brand equity, which refers to the incremental utility or value added to a product by its brand name, has been deemed as primary capital for many industries (Keller, 2003). From the perspective of the consumer, Keller (2003) defines the customer-based brand equity, i.e. one particular view of brand equity, as "the differential effect that brand knowledge has on consumer responses to the marketing of that brand."

Aaker (1991) defines brand equity as a set of five categories of brand assets and liabilities linked to a brand, its name, and symbol that add to or subtract from the value provided by a product or service to a firm or to that firm's customers, or both. He further states that these brand assets help consumers to interpret, process, and store information about products and brands by adding or subtracting its values. From Aaker's view point, brand equity is "customer-based" instead of "financial based". Aaker (1991) groups brand assets into five categories 1) brand loyalty 2) brand

awareness 3) perceived quality 4) brand associations, and 5) other proprietary assets (e.g. patents, trademarks, and channel relationships).

Keller (2003) explained brand strength based on both macro and micro considerations. According to him, market leadership and market share comprise brand strength on macro considerations while micro considerations include consumer familiarity, knowledge, preferences, and loyalty. Macro considerations evaluate the performance of the brand in the market, whereas micro considerations evaluate consumer perceptions of the brand (Keller, 2003).

The definition by Keller and Aakar on brand equity identifies brand equity is multi-dimensional and complex phenomenon so that industry should have to pay more attention to the importance of brand equity and devote great efforts to establish unique brand equity for their companies.

The importance of brand equity in various service and product industries in terms of marketing and business management has been addressed by both academics and practitioners but the role of brand equity in the smartphone industry is still sparse and requires more attention. This study explores the customer-based brand equity in the smartphone industry.

Statement of the Problem

The emergence of smartphones has represented an important change in the mobile phone industry, both in terms of technological innovations and in terms of industrial dynamics. Smartphones have appeared in the market as the standard configuration for mobile devices and currently represent the fastest growing market segment in the telecoms industry (Cecere, Corrocher & Battaglia, 2014).

It is considered as high involving products which are not purchased often but are relevant and important to the buyer due to its daily use and multiple

functionalities. Due to its daily use for multiple functionalities, the performance in terms of battery, touch screen quality etc. of the smartphone deteriorates with its usage. Further the new technologies developed in the smartphones will insist the consumers to purchase new smartphone. This ensures consistent viability of this business.

Technical change and new product proliferation have made this industry extremely dynamic (Cecere, Corrocher & Battaglia, 2014). The researchers further state that competition among brands of smartphones is very intense although there are few players with highly concentrated market shares. This has enabled marketers to create and manage brand equity.

Brand equity refers to the incremental utility or value added to a product by its brand name (Keller, 1993). This has been considered as primary capital for both the product and service industries. Studies to understand the formation process of brand equity are the principal sources of building a positive image to enhance success in brand equity.

The importance of brand equity in terms of marketing and business management has been addressed by both academics and practitioners, however there is lack of harmony regarding the measurement of brand equity (Chen & Tseng, 2010).

Studies on brand equity in airlines industry (Chen and Tseng, 2010), hospitality industry (Park, 2009) etc. have been conducted by various scholars in recent years, deficiency of such empirical research in the smartphone industry using the customer-based brand equity model has been noticed.

Therefore, it is imperative to find how brand equity is formed in the smartphones. Brand equity dimensions are formed as a result of various marketing mix such as product features, promotion, price and distribution channel. Thus, the

approach of this research is to study the effect of product features and promotion on brand equity dimensions. Further, the study also tries to find the effect of brand equity dimensions on brand equity.

Objectives of the Study

This study assesses the formation process of brand equity in smartphones based on customer-based brand equity models proposed by Aaker (1991) and Keller (1993). Although several studies have identified the important components of brand equity in other industries, additional studies are still needed to understand how consumers perceive the brand equity in the competitive smartphone industry.

In order to understand how consumers evaluate brands, researchers and practitioners need a comprehensive understanding of brand equity. Hence, this study proposes to acquire a better knowledge of brand equity in smartphones. The main objective of this study is to develop a better understanding of formation of brand equity in smartphones.

The specific objective of this study is to examine the effect of marketing programs on brand equity dimensions and subsequently brand equity in smartphones using a comprehensive model of customer-based brand equity. More specifically, the research fulfills the following objectives.

1. To identify the effect of features of smartphone and promotion on brand awareness, perceived quality and perceived value
2. To examine the effect of brand awareness, perceived quality and perceived value on brand image
3. To find the effect of brand image on brand preference, brand loyalty and brand repurchase

4. To examine the effect of brand preference on brand loyalty and brand repurchase
5. To assess the effect of brand loyalty on brand repurchase

This study helped to create tangible that contribute to the manufacturer, and marketers associated in the smartphone industry.

Organization of the Study

The report of this study is organized in five chapters. Starting with chapter one which includes the background, the problem statement and the research objectives.

Chapter two covers the literature review on the marketing programs, brand equity dimensions and brand equity. The review includes the definitions, related theories, different perspectives proposed by various scholars, along with the findings of previous research investigations. It reviews two theoretical customer-based brand equity framework proposed by Aakar (1996) and Keller (2003). Based on these two theoretical framework and previous studies, conceptual framework was designed.

Chapter three discusses about research methodology. This chapter describes the research design, research instruments, research hypothesis, sampling approach and statistical methods for the pretest and main study analysis.

Chapter four presents the result of different statistical analysis to fulfill the five research objectives in the research study. It presents the pretest analysis followed by main study analysis. The pretest analysis includes sample description, unidimensionality and reliability test. The main study analysis comprises of descriptive statistics, test for model fit, convergent and discriminant validation and structural equation modeling.

The study concludes with chapter five with summary of the findings and discussions on research findings. Implications of the research are also discussed in this chapter. Finally, the critique of the study is highlighted.

CHAPTER II

REVIEW OF LITERATURE

One of the most popular and potentially important marketing concepts that arose in the 1980s was the concept of brand equity. Fundamentally, branding is about endowing products and services with the power of brand equity. Brand equity relates to the fact that different outcomes result from the marketing of a product or service because of its brand than if that same product or service had not been identified by that brand (Keller, 2003).

The marketing science institute (Leuthesser, 1988) defines brand equity as the set of associations and behaviors on the part of the brand's customers, channel members, parent corporations that permits the brand to earn greater volume or greater margins than it could without the brand name and that gives the brand a strong, sustainable, and differentiated advantage over competitors. Brand equity refers to the incremental utility or value added to a product by its brand name (Keller, 2003). This has been deemed as primary capital for both the service and product industries. Yoo and Donthu (2001) says the related issues on brand equity include the positive effect of brand equity on a company's future profits and long-term cash flow, a customer willingness to pay premium prices, merger and acquisition decision making, stock prices, sustainable competitive advantage, and marketing success. In practical terms, brand equity means that brands are financial assets and should be recognized as such by top management and the financial markets (Tuominen, 1999).

Brand equity can be defined in many contexts. As cited in Chen and Tseng (2004), the main contexts include the added value endowed by the brand name

(Farquhar, 1998); brand loyalty, brand awareness, perceived quality, and brand association (Aaker, 1991); differential effect of brand knowledge on consumer response to the marketing of the brand (Keller, 1993); total utility (Swait et al., 1993); and the difference between overall brand preference and multi-attributed preference based on objectively measured attribute level (Park and Srinivasan, 1994).

The literature has built up three main perspectives of brand equity: the financial perspectives, the customer-based perspective, and the combined perspective (Chen and Tseng, 2004). Keller (1993) states financial brand equity is based on the incremental discounted future cash flows that result from a branded product's revenue over the revenue of an unbranded product. On the other hand, the customer-based brand equity is defined as the differential effect of brand knowledge on a customer's response to the marketing of the brand (Keller, 1993). The combined perspective incorporates both financial brand equity and customer-based brand equity.

Customer-based brand equity (CBBE) provides a unique point of view as to what brand equity is and how it should best be built, measured and managed. The basic premise of the CBBE model is that the power of a brand lies in what customers have learned, felt, seen and heard about the brand as a result of their experiences over time. In other words, the power of a brand lies in what resides in the minds of customers (Keller, 200). The challenge for marketers in building a strong brand is ensuring that customers have the right type of experiences with products and services and their accompanying marketing programs so that the desired thoughts, feelings, images, beliefs, perceptions, opinions, and so on become linked to the brand (Keller, 2003).

Keller (2003) states customer-based brand equity is formally defined as the differential effect that brand knowledge has on consumer response to the marketing of

that brand. He states a brand is said to have positive customer-based brand equity when consumers react more favorably to a product and the way it is marketed when the brand is identified than when it is not. Thus, he further states a brand with positive customer-based brand equity might result in consumers being more accepting of a new brand extension, less sensitive to price increases and withdrawal of advertising support, or more willing to seek the brand in a new distribution channel. On the other hand, Keller indicates a brand is said to have negative customer-based brand equity if consumers react less favorable to marketing activity for the brand compared with an unnamed or fictitiously named version of the product.

The above definition by Keller (2003) identifies three ingredients 1) "differential effect" 2) "brand knowledge" and 3) "consumer response to marketing". Firstly he states brand equity arises from differences in consumer response. If no differences occur, then the brand name product can essentially be classified as a commodity or generic version of the product. Competition, most likely, would then just be based on price. Secondly, according to him, these differences in response are a result of consumers' knowledge about the brand, that is, what customers have learned, felt, seen, and heard about the brand as a result of their experiences over time. Thus although strongly influenced by the marketing activity of the firm, brand equity ultimately depends on what resides in the minds of consumers. Thirdly he states the differential response by consumers that makes up the brand equity is reflected in perceptions, preferences, and behavior related to all aspects of the marketing of a brand.

Chen and Tseng (2004) operationalized customer-based brand equity into two categories: consumer perception and customer behavior. Although some researchers have defined customer-based brand equity by only perceptual dimensions, Aaker

(1991)'s definition of customer-based brand equity, which has been broadly accepted and employed by many researchers include both perceptual and behavioral dimensions. Consumer-based brand equity means a measurement of perceptual and/or behavioral brand equity at the individual consumer level through a consumer survey. Collectively, brand equity consists of four dimensions: brand awareness, perceived quality, and brand image and brand loyalty (Aaker, 1991).

This study hypothesized both the perceptual and behavioral categories as the component of brand equity and the causal relationship between perceptual and behavioral dimensions. Using both perceptual and behavioral dimensions into account while measuring brand equity, has a number of advantages. Consumer perceptions are clearly an antecedent to behavioral manifestations of brand equity. Although behavioral measures of purchase reflect the existence of equity, they fail to reveal the factors actually driving equity without measuring the perceptual dimension of brand equity (Cobb-Walgren, 1995 as cited in Chen and Tseng, 2004).

Theoretical Framework

Various researchers have defined brand equity in different ways; however, two definitions and models of Aakar (1991) and Keller (1993) are noteworthy and popular in the brand literature.

Aaker's Customer-Based Brand Equity Framework

Aaker (1991) defines brand equity as a set of five categories of brand assets and liabilities linked to a brand, its name, and symbol that add to or subtract from the value provided by a product or service to a firm or to that firm's customers, or both. These brand assets help consumers to interpret, process, and store information about products and brands by adding or subtracting its values. From Aaker's view point,

brand equity is "customer-based" instead of "financial based". Therefore, customer-based brand equity would be more important for this study of smartphones.

Aaker's categorization of brand assets are 1) brand loyalty 2) brand awareness 3) perceived quality 4) brand associations, and 5) other proprietary assets (e.g. patents, trademarks, and channel relationships). These categories are considered the main basis for brand equity measurement from a consumer-oriented perspective. Aaker (1996) emphasized the fact that brand value to the firm (the firm-based brand equity) can be improved by the customer-based brand equity. High brand equity, including customer-based and firm based brand equity, allows the brand or product to compete with differentiating brands or products. Thus, brand owners are able to charge a premium price as well as promoting customer's brand loyalty (Aaker, 1991).

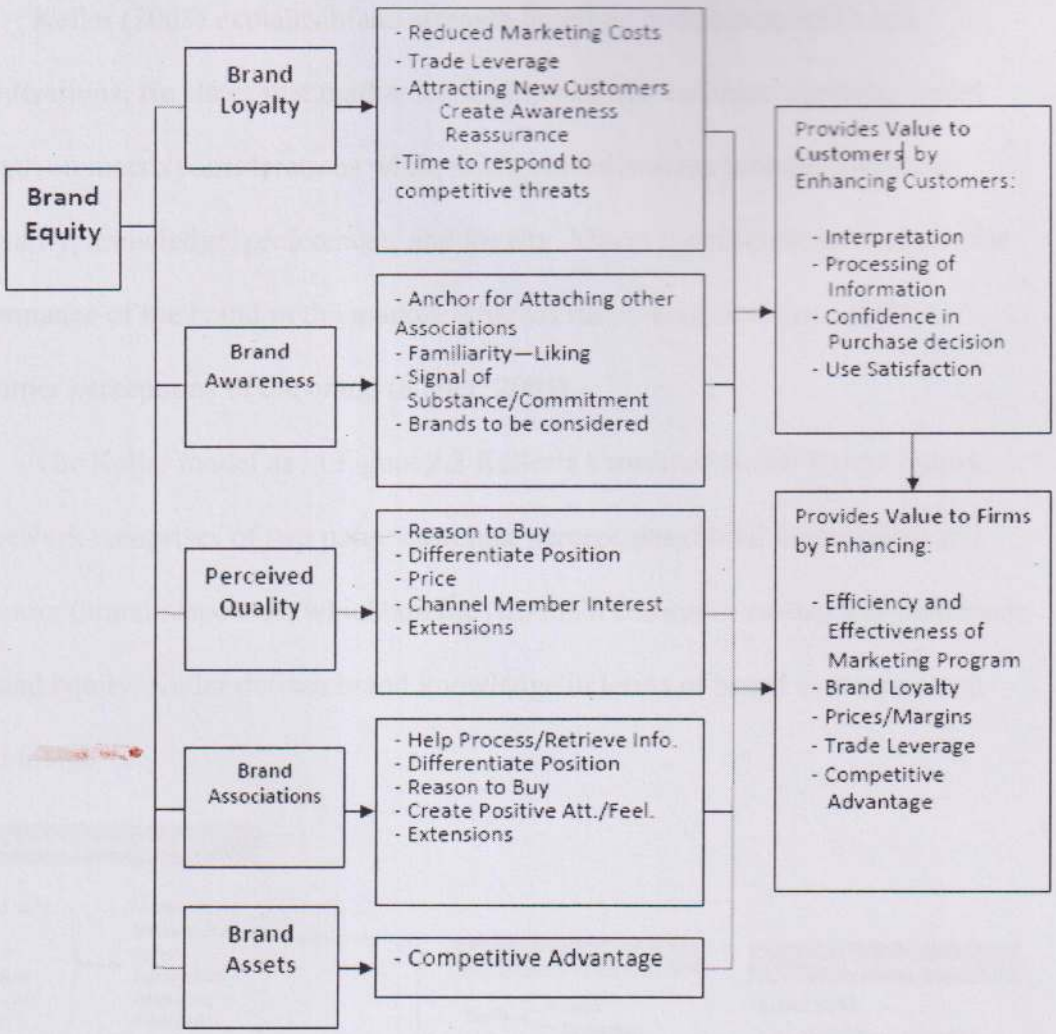

Figure 2.1 Aaker's Based Brand Equity Framework. Reprinted from *Strategic Brand Management: Building, Measuring, and Managing Brand Equity* (p. 790) by K.L. Keller, 2003, 2nd edition, Pearson Education.

Keller's Customer-Based Brand Equity Framework

Building brand equity requires creating a brand that consumers are sufficiently aware of and with which they have strong, favorable, and unique brand associations. This knowledge building process depend on 1) the initial choices for the brand elements or identities making up the brand 2) the marketing activities and supporting marketing program and the manner by which the brand is integrated into them 3) other associations indirectly transferred to the brand by linking it to some other entity (e.g. the company, country of origin, channel of distribution, or another brand) (Keller, 2003).

Keller (2003) explains brand strength based on both macro and micro considerations. He states that market leadership and market share comprise brand strength on macro considerations while micro considerations include consumer familiarity, knowledge, preferences, and loyalty. Macro considerations evaluate the performance of the brand in the market, whereas micro considerations evaluate consumer perceptions of the brand (Keller, 2003).

The Keller model as in Figure 2.2 Keller's Customer-Based Brand Equity Framework comprises of two parts: customer perceptions (brand knowledge) and behaviors (brand responses) which are the two main consumer related sub-constructs of brand equity. Keller defines brand knowledge in terms of brand awareness and brand image.

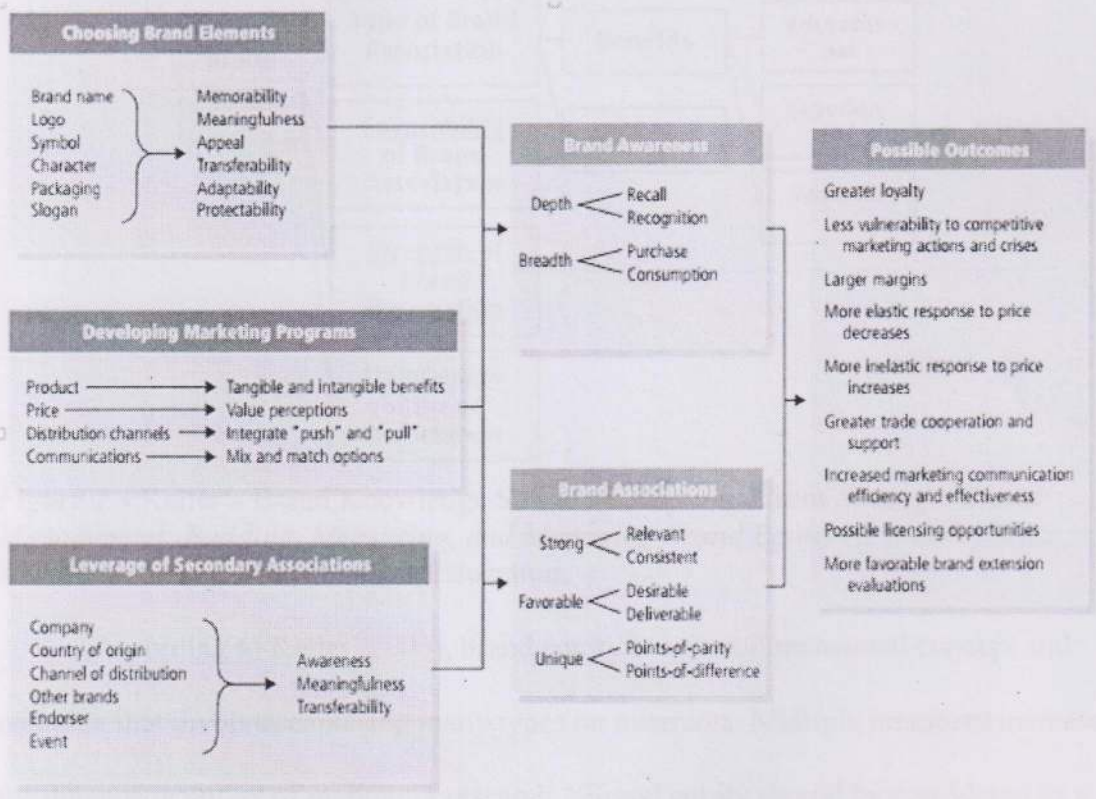

Figure 2.2 Keller's Customer-Based Brand Equity Framework. Reprinted from *Strategic Brand Management: Building, Measuring, and Managing Brand Equity* (p. 550) by K.L. Keller, 2013, 4th edition, Pearson Education.

Further, Keller (2003) emphasized the importance of creating favorable and unique brand knowledge structure in consumers' mind because successful branding convinces customers that there is a significant difference between the target brand and the competitor brand, thus creating an appealing product image. These differences add value to brands or companies; therefore consumers show great loyalty to the high-equity brand and are willing to pay a premium price for the brand which has favorable images.

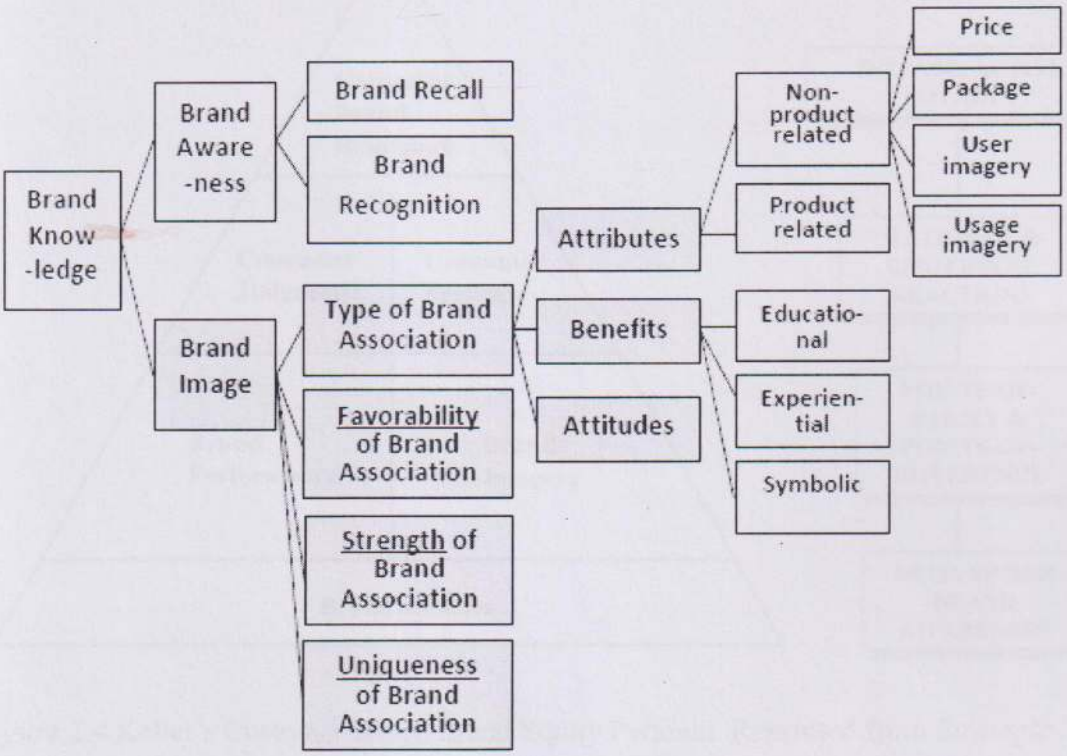

Figure 2.3 Keller's Brand Knowledge Structure. Reprinted from *Strategic Brand Management: Building, Measuring, and Managing Brand Equity* (p. 548) by K.L. Keller, 2013, 4th edition, Pearson Education.

According to Keller (2003), brand equity is a multidimensional concept and complex that involves capturing many types on measures. Multiple measures increase the diagnostic power of marketing research. "Brand equity should be considered as a multidimensional concept, which can be offered by the knowledge structures in the consumers' mind (Keller, 1993).

Building a strong brand, according to CBBE model, can be thought of in terms of a sequence of steps, in which each step is contingent on successfully achieving the previous step (Keller, 2003). He identified four steps that represent a set of fundamental questions that customers invariably ask about brands-at least implicitly if not even explicitly. These steps have been mentioned in Keller Customer Based Brand Equity Pyramid in Fig 2.4 as below.

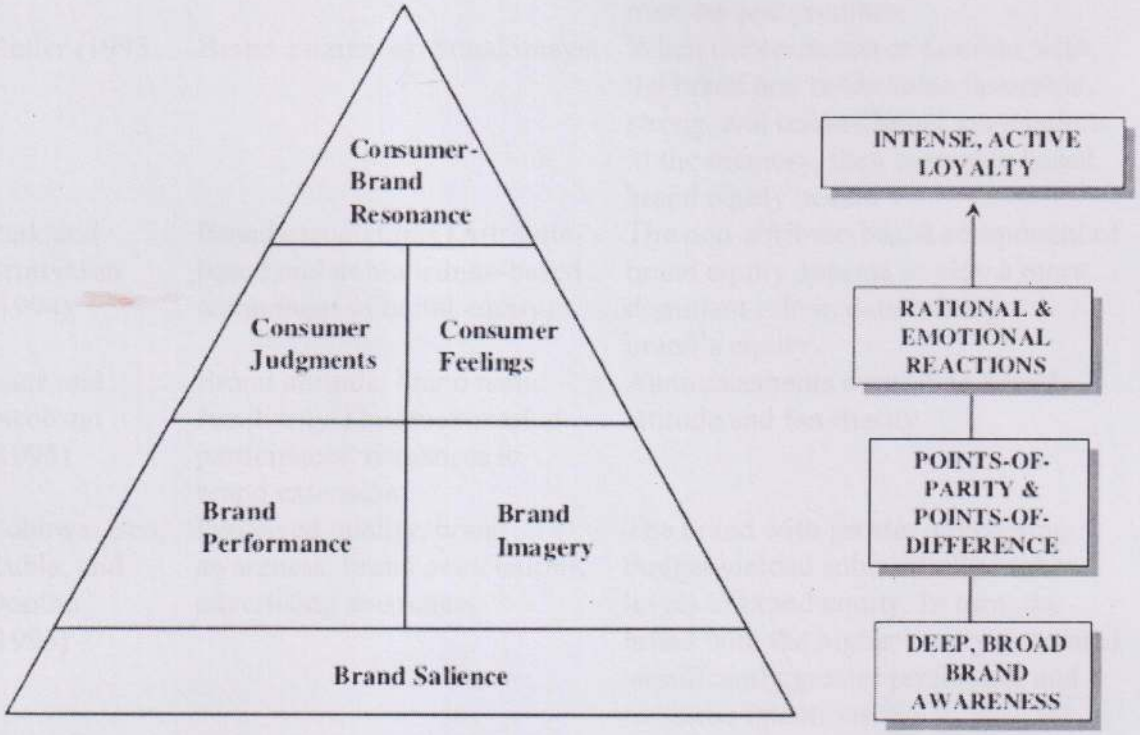

Figure 2.4 Keller's Customer-Based Brand Equity Pyramid. Reprinted from *Strategic Brand Management: Building, Measuring, and Managing Brand Equity* (p. 127) by K.L. Keller, 2003, 2nd edition, Pearson Education.

A number of studies have been conducted to identify the dimensions of brand equity as indicated in Table 2.1 and have resulted different outcomes. Further, various studies have provided empirical understanding of the dimensions in Aaker's brand equity model and the Keller's brand equity models. Besides, most of these studies were conducted in the FMCG, automobiles, appeals and service industry. Such studies on technological device are rare. Therefore, drawing on Keller's customer-based

brand equity and Aaker's brand equity model, this study conceptualized the theoretical model in the smartphone industry.

Table 2.1

Mostly cited "Brand Equity" studies

Author	Dimensions of Brand Equity	Related Findings
Aaker (1996)	Brand loyalty, perceived quality, brand awareness, brand associations	Four dimensions of brand equity represent customer perceptions of the brand and could be applied across markets and products.
Keller (1993)	Brand awareness, brand image	When the consumer is familiar with the brand and holds some favorable, strong, and unique brand associations in the memory, then customer-based brand equity occurs
Park and Srinivasan (1994)	Brand associations (Attribute-based and non-attribute-based component of brand equity)	The non-attribute-based component of brand equity appears to play a more dominant role in determining a brand's equity
Lane and Jacobson (1995)	Brand attitude, brand name familiarity The stock market participants' responses to brand extension	Announcements depend on brand attitude and familiarity
Cobbwalgren, Ruble, and Donthu (1995)	Perceived quality, brand awareness, brand associations, advertising awareness	The brand with greater advertising budget yielded substantially higher levels of brand equity. In turn, the brand with the higher equity generated significantly greater preference and purchase intentions.
Yoo, Donthu, and Lee (2000)	Brand loyalty, perceived quality, brand awareness/associations	Brand equity is positively related to perceived quality, brand loyalty, and brand associations. The relationship of perceived quality and brand associations to brand equity is much weaker than the relationship of brand loyalty to brand equity
Berry (2000)	Brand awareness, brand meaning (customer's dominant perceptions)	Positive service brand equity emerges from the synergy of brand awareness and brand meaning.
Yoo and Donthu (2001)	Brand loyalty, perceived quality, brand awareness/associations	A multidimensional brand equity scale is validated across Americans, Korean Americans and Koreans samples
Gil (2007)	Brand loyalty, perceived quality, brand Awareness, brand associations	Brand loyalty is much closer to the concept of overall brand equity than brand awareness-associations and perceived quality

Author	Dimensions of Brand Equity	Related Findings
Atilgan (2009)	Brand loyalty, perceived quality, brand Awareness, Brand associations, Brand Trust	Emergence of brand trust as a new dimension instead of brand awareness complies well with recent literature on global branding
Mishra and Datta (2011)	Brand Name, Brand Communication, Brand Association, Brand Personality, Brand Awareness, Brand Image, Perceived Brand quality, Brand Loyalty	Importance of the effect of the brand assets treated as antecedents like brand name, awareness, personality and consequences like brand preference and purchase intention on customer based brand equity

Note: Mostly cited "Brand Equity" studies. Adapted from "Evaluate the Factors Affecting Brand Equity from the Perspective of Customers Using Aaker's Model" by M. Taleghani and M. Almasi, 2011, Taleghani et al., 2011, *Kuwait Chapter of Arabian Journal of Business and Management Review,* 1(8).

Operationalization of the Variables

Product Features

Product features are also called brand quality or brand attitudes and is defined as consumers' overall evaluation of the brand. Brand attitudes are important because they often form the basis for actions and behavior that consumers take with the brand. Consumers brand attitudes generally depend on specific considerations concerning the attributes and benefits of the brand (Keller, 2003).

Attributes are those descriptive features that characterize a product or service-what a consumers thinks the product or service is or has and what is involved with its purchase or consumption. Product related attributes are defined as the ingredients necessary for performing the product function sought by consumers (Keller, 1993).

Promotion

Promotion consists of a number of varieties of tools in marketing such as sales promotion, advertising, unpaid promotion like word of mouth etc. Sales promotion consists of a set of various, different and short period motive tools which is used for consumer's or buyer's provocation to buy more and faster (Gupta, 1998 as cited in Rahmani, Mojaveri and Allahbaksha, 2012). Advertising is any paid form of non-

personal presentation and promotion of ideas, goods and services. Among components of marketing integrated communication model, advertising has more identified position than the other marketing components, because customers informed new products through advertising. (Ryans and Ratz, 1987 as cited in Rahmani, Mojaveri & Allahbaksha, 2012).

Brand Awareness

Brand awareness is "the ability for a buyer to recognize or recall that a brand is a member of a certain product category" (Aaker, 1991) and consists of both brand recognition and recall (Keller, 1993). Brand recognition relates to consumers' ability to confirm prior exposure to the brand when given the brand as a cue which means consumers can correctly discriminate the brand as having been previously seen or heard (Keller, 2003). Brand recall relates to consumers' ability to retrieve the brand from memory when given the product category, the needs fulfilled by the category, or a purchase or usage situation as a cue (Keller, 2003). Awareness is argued as being a first and necessary, but not sufficient, step leading to trial and repeat purchases, because the effect of awareness results at best in product curiosity (Konecnik and Gartner, 2007 as cited in Chen and Tseng, 2010).

Perceived Quality

Perceived quality has been widely agreed to be a vital element affecting consumer behavior (Chen and Tseng, 2004). Perceived quality has been defined as customer's perception of the overall quality or superiority of a product or service relative to relevant alternatives and with respect to its intended purpose. It is the global assessment based on consumer perceptions of what constitutes a quality product and how well the brand rates on those dimensions (Keller, 2003).

Perceived Value

The primary goal of a marketer is to enhance target customers' willingness to purchase products. As cited in Agrawal and Teas (2001), two somewhat independent streams of research have emerged in the marketing literature pertaining to customers' willingness to purchase. One stream purports that customers purchase products that offer them the greatest perceived value (Zeithaml, 1988), whereas the other purports that customers purchase products that pose the least amount of risks (Baur, 1960). The first stream of research, which builds on the work of Zeithaml (1988) and which produced the Dodds, Monroe and Grewal (1991) model, suggests that consumers use extrinsic cues (such as price, brand name, and store name) to form perceptions of product quality (or benefits) and perceptions of monetary sacrifice (or costs), which, in turn, lead them to form perceptions of value (Dodds et al., 1991). A second stream of research, which builds on the work of Baur (1960), suggests that consumers use extrinsic cues (such as price, manufacturer reputation, and warranty) to form perceptions of risks, which, in turn, lead them to form perceptions of value (Bearden and Shimp, 1982).

Brand Image

Brand image, an essential element in marketing research, is defined as perceptions about a brand as reflected by the brand associations held in consumer's memory (Keller, 1993). A positive brand image creates a strong, favorable, and unique association which has important implications for building brand equity. The definition of customer-based brand equity does not distinguish between the source of brand associations and the manner in which they are formed; all that matters is the resulting favorability, strength, and uniqueness of brand associations (Keller, 2003). This realization has important implications for building brand equity. Besides

marketer-controlled sources of information, brand associations can also be created in a variety of other ways: by direct experience, from information communicated about the brand from the firm or other commercial or non-partisan sources and word of mouth, and by assumptions or inferences from the brand itself or from the identification of the brand with a company, country, channel of distribution, or some particular person, place or event (Keller, 2003).

Brand Preference

Brand preference is understood as a measure of brand loyalty in which a consumer exercises his decision to choose a particular brand in presence of competing brands (Rajagopal, 2009). Brand preference has a more enduring attributes and most of the multinational brands focus on growing the lifetime value of their consumers and global brands are built in reference to consumer preferences concerning buying decisions and corporate accountability (Rajagopal, 2009).

Brand preference is "the extent to which the customer favors the designated service provided by a certain company, in comparison to the designated service provided by other companies in his or her consideration set" (Hellier et al., 2003 as cited in Hwang, 2011). Customers form brand preferences to reduce the complexity of the purchase decision process.

Brand Loyalty

A major outcome of branding is creating customer's brand loyalty. Brand loyalty measured from a consumer perspective is a key variable in brand equity management (Aaker, 1991). In addition, brand loyalty is a main source of brand equity in Keller's customer-based brand equity framework (2003). According to Jacoby & Kyner (1973), brand loyalty is the biased behavioral response expressed over time through individual decision-making with respect to one or more alternative

brands out of a set of such brands, and is a function of psychological evaluative processes. Similarly, Aaker (1991) views brand loyalty as the attachment that the customer has to a brand. Oliver (1999) defines loyalty as "a deeply held commitment to repurchase or re-patronize a preferred product/service consistently in the future, thereby causing repetitive same-brand".

Brand Repurchase

Repurchase intension is defined as consumers judgment to decide to whether purchase products or services again after they have already consumed some of their products or services (Sophapan, 2013).

The brand loyalty is a function of decision making, evaluative processes. It reflects a purchase decision in which the various brands are psychologically perhaps even physically compared and evaluated on certain criteria and the "optimal" brand is selected. Optimal here is defined as the sense of being most rewarding and all relevant decision criteria has been considered (Jacoby & Kyner, 1973).

Conceptual Framework

The conceptual framework has been developed based on the theoretical framework of Keller (1993) and Aakar (1996) customer based brand equity models and other aforementioned studies. Firstly, the relationship of product features and the promotion activities were studied on brand awareness, perceived quality and perceived value. Secondly, the effect of brand awareness, perceived quality and perceived value on brand image was assessed. Thirdly, the relationship of brand image on brand preference, brand loyalty and brand repurchase was examined. Fourthly, the effect of brand preference on brand loyalty and brand repurchase was assessed. Finally, the effect of brand loyalty on brand repurchase was investigated.

The constructs in the conceptual model has been categorized into three headings. Product features and promotion are classified into heading 1: "Marketing Programs" as indicated by Keller's Customer based brand equity framework (2003). Brand Awareness, perceived quality, perceived value and brand image are categorized into heading 2: "Brand Equity Dimensions" as suggested by Keller (1993) and Yoo, Donthu, & Lee (2000). Brand Preference, brand loyalty and brand repurchase are classified into heading 3: "Brand Equity" as recommended by Aakar's Customer-Based Brand Equity (1991).

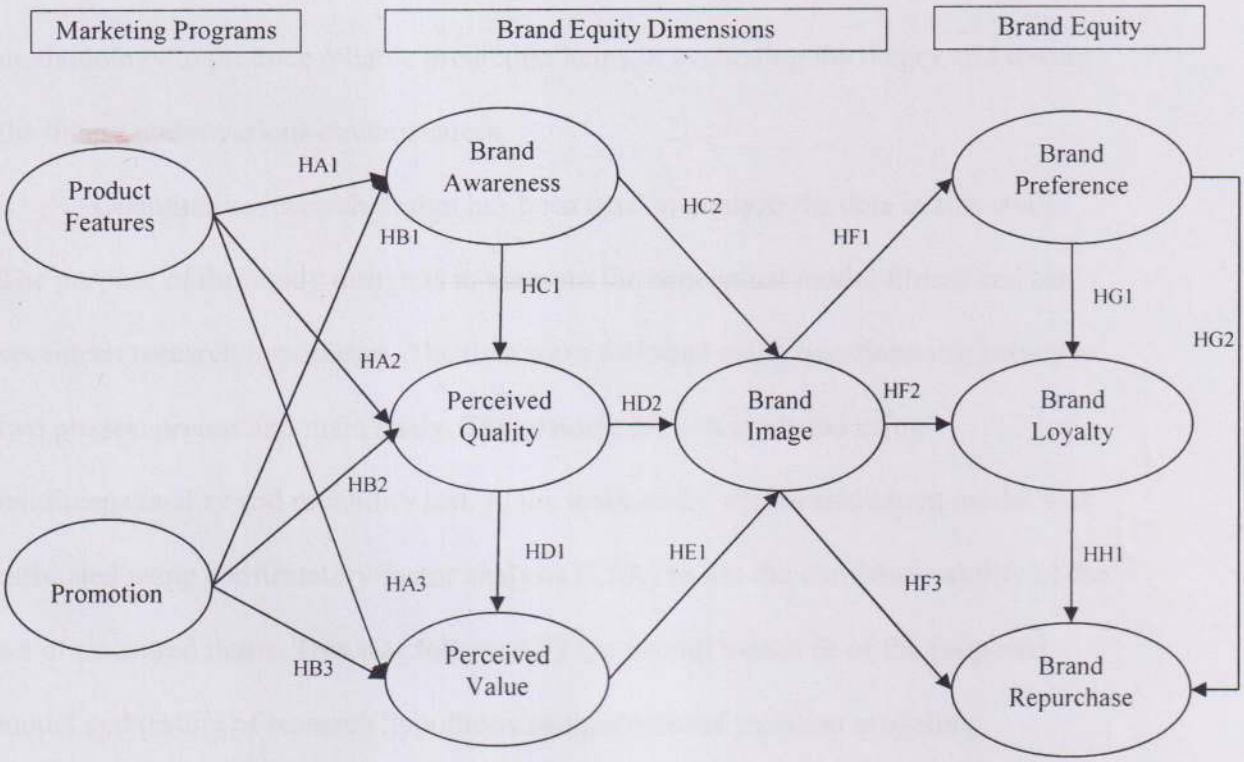

Figure 2.5 Conceptual Framework

CHAPTER III

RESEARCH METHODOLOGY

Research Design

Research design refers to the overall process that has been chosen to integrate the different components of the study in a logical way. Quantitative research method is a scientific approach of obtaining the opinions of the people in a structured way to produce reliable statistical results. The characteristic of quantitative research methodology to produce reliable prediction helps in evaluating the theory and testing the theory under various circumstances.

Quantitative research design has been used to analyze the data in this study. The purpose of this study design is to measure the conceptual model fitness and test seventeen research hypotheses. The data were collected using questionnaire survey in two phases: pretest and main study. The pretest data was analyzed using unidimensionality and reliability test. In the main study, the measurement model was estimated using confirmatory factor analysis (CFA) to test the construct validity of the set of measured items. This was followed by the overall model fit of the proposed model and testing of research hypothesis using structural equation modeling.

Instrument

The proposed model includes nine latent constructs including 1) product features 2) promotion 3) brand awareness 4) perceived quality 5) perceived value 6) brand image 7) brand preference 8) brand loyalty 9) brand repurchase. With relevant literature review, the items for all the constructs as in conceptual framework were adopted. A pretest was conducted to the initial questionnaire. The final version of the

instrument was obtained through the pretest that was designed to enhance construct reliability and validity.

Product Features

Consumer perception towards the product features were measured using eight five point Likert scale (Strongly disagree/Disagree/Neither Agree or Disagree/Agree/Strongly Agree). The items were created eliciting meaningful insights from the daily newspaper relevant to product features.

Promotion

Consumer perception towards the promotion was measured using three five point Likert scale (Strongly disagree/Disagree/Neither Agree or Disagree/Agree/Strongly Agree). The items were created from the information in the daily newspaper and the researcher's observation relevant to promotion.

Brand Awareness

Brand awareness was measured using three five point Likert scale (Strongly disagree/Disagree/Neither Agree or Disagree/Agree/Strongly Agree). The items were adopted from studies by Aakar (1991) and Keller (1993).

Perceived Quality

Perceived quality was measured using three five point Likert scale (Strongly disagree/Disagree/Neither Agree or Disagree/Agree/Strongly Agree). The items were adopted from Marketing Scales Handbook, Volume V (Bruner II, 2005).

Perceived Value

Perceived value was measured using three five point Likert scale (Strongly disagree/Disagree/Neither Agree or Disagree/Agree/Strongly Agree). The items were adopted from Marketing Scales Handbook, Volume V (Bruner II, 2005).

Brand Image

Brand Image was measured using three five point Likert scale (Strongly disagree/Disagree/Neither Agree or Disagree/Agree/Strongly Agree). The items were adopted from Matzler et al. (2008).

Brand Preference

Brand Preference was measured using three five point Likert scale (Strongly disagree/Disagree/Neither Agree or Disagree/Agree/Strongly Agree). The items were adopted from Marketing Scales Handbook, Volume IX (Bruner II, 2017).

Brand Loyalty

Brand Loyalty was measured using three five point Likert scale (Strongly disagree/Disagree/Neither Agree or Disagree/Agree/Strongly Agree). The items were adopted from Chiou & Droge (2006).

Brand Repurchase

Brand Repurchase was measured using three five point Likert scale (Strongly disagree/Disagree/Neither Agree or Disagree/Agree/Strongly Agree). The items were adopted from Marketing Scales Handbook, Volume IX (Bruner II, 2017).

Research Hypothesis

Based on a comprehensive review of the previously discussed literature and the propositions derived from them as in conceptual framework Fig 2.5, the following hypotheses have been set.

HA1: Product features have significant effect on brand awareness.

HA2: Product features have significant effect on perceived quality.

HA3: Product features have significant effect on perceived value.

HB1: Promotion has significant effect on brand awareness.

HB2: Promotion has significant effect on perceived quality.

HB3: Promotion has significant effect on perceived value.

HC1: Brand Awareness has significant effect on perceived quality.

HC2: Brand Awareness has significant effect on brand image.

HD1: Perceived Quality has significant effect on perceived value.

HD2: Perceived Quality has significant effect on brand image.

HE1: Perceived Value has significant effect on brand image.

HF1: Brand Image has significant effect on brand preference.

HF2: Brand Image has significant effect on brand loyalty.

HF3: Brand Image has significant effect on brand repurchase.

HG1: Brand preference has significant effect on brand loyalty.

HG2: Brand preference has significant effect on brand repurchase.

HH1: Brand loyalty has significant effect on brand repurchase.

Sampling Approach

The data for the study were collected using self-administered questionnaire survey. The study adopts the convenience sampling approach due to unknown population of smartphone users. The samples were collected from the two districts i.e. Kathmandu and Lalitpur inside Kathmandu valley. The respondents were asked if they have time to fill up the survey questionnaires. Those who were interested to express their views regarding their smartphone were provided the questionnaire.

The data were collected with diverse group of people at various locations in Kathmandu and Lalitpur districts. These groups include business people, government employees, private sector employees, INGO/NGO employees, students etc. The students' data were obtained from colleges; government employees' data were obtained from government offices. Similarly, other segments of data were obtained

from the respective locations and offices where the intended respondents were available.

The discussion of statistical power demonstrated the substantial impact sample size plays in achieving statistical significance, both in small and large sample size. For smaller samples, the sophistication and complexity of the multivariate technique may result in either (1) too little statistical power for the test to realistically identify significant results or (2) too easily an "over fitting" of the data such that the results are artificially good because they fit the sample very well, yet has no generalizability. The similar impact also occurs for large sample sizes which can make the statistical tests overly sensitive. Hence, the researchers should examine all significant results to ensure that they have practical significance due to the increased statistical power from the sample size (Hair et al., 2003).

The full information estimation methods depend on large-sample properties, a natural concern is the sample size needed to obtain meaningful parameter estimates. In low sample size as 50, the deviation of the parameter estimates from their respective population values can be quite large (Anderson and Gerbing, 1988). Generally, the factor analysis on sample of fewer than 50 observations cannot be performed and preferably the sample size should be 100 or larger (Hair et. al., 2003). A sample size of 150 and over shall be required to obtain parameter estimates that have standard errors small enough to be of practical use (Anderson and Gerbing, 1988). Anderson and Gerbing (1988) have also found that a sample size of 150 will usually be sufficient to obtain a converged and proper solution for models with three or more indicators per factor. Hair et al. (2003) suggest the sample size for maximum likelihood estimation (MLE) should be 100 to 150. As the sample size becomes large (exceeding 400 or 500), the method becomes too sensitive and almost any difference

is detected, making all goodness-of-fit measures indicate poor fit (Hair et al., 2003). Although, guidelines on minimum sample sizes have not been determined, suggested sample size is 400 or 500 (Tanaka, 1984 as cited in Anderson and Gerbing, 1988).

The sample was collected in two phases for the (a) pretest study and (b) main study. The pretest data were collected to filter the initial survey instrument through an investigation of unidimensionality and reliability test. As suggested by Hair at el. (2003), a minimum sample size of 100 is required for factor analysis and similarly the samples of 100 were collected for the pretest analysis. For the main study, a sample of 580 was collected as suggested.

Method for Data Analysis

This study consists of pre-test analysis followed by the main study analysis. First, the test of unidimensionality and reliability was performed for the pretest data. Upon the unidimensionality and reliability test, the questionnaire was modified with elimination of practically non-significant items of the constructs. The main study analysis was performed using Structural Equation Modeling with the data collected from modified questionnaire.

Method for Pretest Analysis

The pretest analysis was conducted prior to the collection of the data for the main study to filter the initial survey instrument through an investigation of unidimensionality and reliability test. The unidimensionality test was performed using exploratory factor analysis with principal component extraction with varimax rotation method. The reliability test was performed to test the internal consistency in measuring results using the coefficient alpha. A Cronbach's alpha was used to measure the internal consistency.

The pretest study has been performed in three phases. In the first phase, the sample demographic characteristics of the collected data were presented in the tabular form using descriptive statistics. The demographics characteristic consists of age group, gender, education and occupation.

In the second phase, test for unidimensionality was conducted using exploratory factor analysis with principal component extraction with varimax rotation method. Unidimensionality is an assumption underlying the calculation of reliability and is demonstrated when the indicators of a construct have acceptable fit on a single factor (one-dimensional) model (Hair et al., 2003). Achieving unidimensionality measurement is a crucial undertaking in theory testing and development. A necessary condition for assigning meaning to estimated constructs is that the measures that are posited as alternative indicators of each construct must be acceptably unidimensional (Anderson and Gerbing, 1988). That indicates, each set of alternative indicators has only one underlying trait or construct in common (Hair et al., 2003).

In the third phase, test of reliability was performed using the coefficient alpha. Reliability is a measure of the internal consistency of the construct indicators, depicting the degree to which they indicate the common latent (unobserved) construct (Hair et al., 2003). Cronbach's alpha is the most widely used diagnostic measure that assesses the consistency of the entire scale using reliability coefficient (Hair et al., 2003). The indicators of highly reliable constructs are highly intercorrelated, indicating that they all are measuring the same latent construct. As reliability decreases, the indicators become less consistent and thus are poorer indicators of the latent construct (Hair et al., 2003).

Method for Main Study Analysis

With the accomplishment of unidimensionality and reliability test on the pretest sample, the sample questionnaire was modified with elimination of practically non-significant items on the constructs and the data were collected accordingly. The collected

data were analyzed using Structural Equation Modeling. The Structural Equation Modeling consists of two sub-models (a) measurement model and (b) structural model.

The first sub model, the measurement model was estimated using confirmatory factor analysis (CFA) to test the construct validity of a set of measured items. The second measurement model, the structural model estimates a causal relationship among the latent variables, and tests the hypotheses given the complex relationships among constructs (Byrne, 2001).

In this research study, data analysis was conducted using the SPSS 23.0 and AMOS 21.0 in three phases. In the first phase, the demographics characteristics of respondents i.e. gender, age, education and occupation were performed using descriptive statistics.

In the second phase, the data analysis was conducted using structural equation modeling. Structural equation modeling (SEM), also known as path analysis with latent variables, is now a regularly used method for representing dependency (arguably "causal") relations in multivariate data in the behavioral and social sciences (McDonald and Ho, 2002). SEM allows the observation of separate relationships for each of a set of variables. SEM is the appropriate and most efficient estimation technique for a series of separate multiple regression equations estimated simultaneously (Hair, et al., 2003).

The Structural Equation Modeling was conducted using two sub-models: a measure model and a structural model. First, a confirmatory factor analysis (CFA) identifies the measurement model, which shows the relationship between the observed and latent variables. It also enables a comprehensive assessment of construct validity including convergent and discriminant validity (Bentler, 1978). The confirmatory

factor analysis was conducted to measure the adequacy of the measurement model in this study. Construct validity were determined by using convergent and discriminant validity.

Second, the structural model estimates a causal relationship among the latent variables, and tests the hypotheses given the complex relationships among constructs (Byrne, 2001). In this study, all construct variances, covariance between constructs and error variances were estimated. The overall model fit in both measurement and structural models were evaluated using conventional fit indices including Chi-Square/df ratio, Root Mean-Square Error of Approximation (RMSEA), Normed Fix Index (NFI), Relative Fit Index (RFI), Comparative Fit Index (CFI), Incremental Fit Index (IFI) and Parsimony Normed Fit Index (PNFI) (Hair et al., 2003).

In the third phase, the overall model fit of the revised SEM model with elimination of non-significant paths were tested using Structural Equation Modeling.

CHAPTER IV

RESULTS

This chapter details the results of the statistical analysis and hypothesis testing for the proposed model. This chapter presents with the pretest analysis followed by main study analysis. Prior to the collection of the data for final study, a pretest was conducted to filter the initial survey instrument through an investigation of unidimensionality and reliability test. The test for unidimensionality was performed using exploratory factor analysis with principal component extraction and varimax rotation method. The reliability test was performed to test the internal consistency in measuring results using the coefficient alpha. A Cronbach's alpha coefficient is used to measure the internal consistency.

The process of data analysis for the main study was conducted in three steps: In the first step, the sample characteristics of the respondents were identified using the descriptive statistics. In the second step, the measurement model was estimated using confirmatory factor analysis (CFA) to test the construct validity of a set of measured items. In the final step, the overall model fit of the proposed model and the research hypotheses were tested using Structural Equation Modeling.

Pretest Analysis

Sample Description

A pretest was administered to 100 smartphone users through self-administered survey. The respondents were asked to fill the following demographic characteristics: gender, age group, education and occupation. The sample of pretest consisted of 51 male (52.6%) and 46 female (47.2%). The majority of the respondents were between

the ages of 20 to 45 years (92%). The age group of 20-25 years (38%) was the largest group.

The pretest study consisted of 52 respondents (53.6%) with bachelor degree qualification. Respondents with bachelors' degree and above constituted 80.4% in the sample study. The majority respondents consisted of 34 private sector employees (34%) followed by 25 students (25%). Detailed information of sample description is presented in Table 4.1

Table 4.1

Demographics Characteristics of Respondents in the Pretest (N=100)

Demographics	Frequency (n)	Percentage (%)
Gender		
Male	51	52.6
Female	46	47.4
Age Group		
Less than 20	12	12
20 to 25 years	38	38
26 to 30 years	15	15
31 to 35 years	12	12
36 to 45 years	15	15
Above 46	8	8
Education		
School level	6	6.2
Intermediate	13	13.4
Bachelors	52	53.6
Masters and above	26	26.8
Occupation		
Private service	34	34
Government service	14	14
Business	18	18
NGO/INGO	3	3
Student	25	25
Others	6	6

Unidimensionality Test of Pretest Data

Prior to the testing of reliability of the pretest, the unidimensionality measures were assessed based on the result of exploratory factor analysis with principal component extraction with varimax rotation method. Unidimensionality refers to

characteristics of a set of indicators that has only one underlying trait or concept in common (Hair et al., 2003). As a rule of thumb used frequently as a means of making preliminary examination of the factor matrix, factor loadings greater than .30 are considered to meet the minimum level; loadings of .40 are considered more important; and the loadings .50 or greater are considered practically significant. These guidelines are applicable when the sample size is 100 or larger and this approach is practical not statistical significant (Hair et al., 2003).

As indicated in Table 4.2, all the factor loading were above .50 except the battery capacity on the construct product features. Although the factor loading of battery capacity (.459) are considered important but not practically significant (Hair et al., 2003), this study terminates battery capacity for the main study. Hence, the results ensured the unidimensionality of each construct.

Reliability Test of the Pretest Data

The scale reliability using SPSS 23.0 was computed in order to purify the scales prior to the final testing. Reliability is a measure of the internal consistency of the construct indicators, depicting the degree to which they indicate the common latent (unobserved) construct (Hair et al., 2003). A Cronbach's Alpha coefficient is generally used to measure the internal consistency. A commonly used threshold value for acceptable reliability is .70, although this is not an absolute standard, and values of .60 have been deemed acceptable if the research is exploratory in nature (Hair et al., 2003).

The coefficient alpha estimates for each of the nine constructs are: product features (.888), promotion (.613), brand awareness (.624), perceived quality (.828), perceived value (.779), brand image (.793), brand preference (.839), brand loyalty (.780) and brand repurchase (.942). Based on the suggested cut off point of .60 for

exploratory research, all measures appeared to be good indicators of each construct with multiple items. The coefficient alpha estimates of the pretest are presented in Table 4.2.

Table 4.2

Results from Exploratory Factor Analysis and Reliability of the Pretest (N=100)

Construct	Factor Loading	% of variance explained	Coefficient Alpha
Product Features		57.63	.888
RAM	.855		
Processor	.827		
ROM	.842		
Display Size	.677		
Screen Resolution	.775		
Battery Capacity	.459		
Front Camera	.795		
Rear Camera	.765		
Promotion		56.99	.613
Ad Campaign	.813		
Friend Relative Referral	.683		
Consumer Offer	.763		
Brand Awareness		57.23	.624
Highly Recognized	.757		
Brand Aware	.702		
Heard a lot on Brand	.807		
Perceived Quality		74.45	.828
Good Quality	.784		
Excellent Features	.871		
Reliable	.927		
Perceived Value		69.64	.779
Worth For Money	.724		
Good Value for Money	.902		
Good Purchase Decision	.867		
Brand Image		70.80	.793
Brand Pride	.789		
Brand Trust	.882		
Brand Credibility	.850		
Brand Preference		75.87	.839
Prefer the Brand	.867		
Better Than Other Brand	.862		
First Preference on Future Purchase	.884		
Brand Loyalty		73.72	.820
Intent To Buy Same Brand	.854		
Recommend To Friends and	.884		
Relatives	.837		
Special To Me			
Brand Repurchase		89.67	.942
Repurchase The Same Brand	.953		
Search To Repurchase	.956		
First Choice On Future Purchase	.931		

Main Study Analysis

Sample Description

The respondents in the main study were asked the following demographic characteristics: gender, age group, education and occupation. A total of 580 complete questionnaires were collected through self-administered survey. The sample of main study consisted of 236 male (51.9%) and 218 female (47.9%). The majority of the respondents were below the age of 30 years (77.4%). The age group of 20-25 years (40.6%) was the largest group.

Table 4.3

Demographics Characteristics of Respondents in the main study (N=580)

Demographics	Frequency (n)	Percentage (%)
Gender		
Male	236	51.9
Female	218	47.9
Age Group		
Less than 20	80	17.1
20 to 25 years	190	40.6
26 to 30 years	92	19.7
31 to 35 years	36	7.7
36 to 45 years	38	8.1
Above 46	32	6.8
Education		
School level	40	8.7
Intermediate	123	26.7
Bachelors	206	44.8
Masters and above	91	19.8
Occupation		
Private service	96	20.5
Government service	37	7.9
Business	93	19.9
NGO/INGO	13	2.8
Student	184	39.3
Others	45	9.6

The main study consisted of 206 respondents (43.8%) with bachelor degree qualification. Respondents with Intermediate and above consisted 91.3% in the sample study. The majority respondents consisted 184 students (39.3%) followed by

96 private service holders (20.5%). Detailed information of sample description is presented in the above Table 4.3.

Confirmatory Factor Analysis of the Main Study

The measurement model of the main study was estimated using confirmatory factor analysis (CFA) to test the construct validity of a set of measured items using AMOS 21.0. Confirmatory analysis uses multivariate technique to test (confirm) a pre-specified relationship (Hair et al., 2003). A confirmatory measurement, or factor analysis, model specifies the relations of the observed measures to their posited underlying constructs, with the constructs allowed to inter-correlate freely. A confirmatory structural model then specifies the causal relations of the constructs to one another, as posited by some theory (Anderson & Gerbing, 1988).

The initially specified measurement models i.e. exploratory factor analysis almost invariably fail to provide acceptable fit, the necessary re-specification and re-estimation using the same data mean that the analysis is not exclusively confirmatory. After acceptable fit has been achieved with a series of re-specifications, the next step in the progression would be to cross-validate the final model on another sample drawn from the population to which the results are to be generalized. This cross-validation would be accomplished by specifying the same model with freely estimated parameters or, in what represents the quintessential confirmatory analysis, the same model with the parameter estimates constrained to the previously estimated values (Anderson & Gerbing, 1988).

For the theory testing and development, the maximum likelihood estimation method to structural equation model has been the predominant estimation method. The maximum likelihood estimation method is theory-oriented and emphasizes the transition from exploratory to confirmatory analysis (Anderson & Gerbing, 1988). Kmenta (1971)

as cited in Anderson & Gerbing (1988) says under the assumption of a multivariate normal distribution of the observed variables, maximum likelihood estimators have the desirable asymptotic, or large-sample, properties of being unbiased, consistent, and efficient. Moreover, significance testing of the individual parameters is possible because estimates of the asymptotic standard errors of the parameter estimates can be obtained. Significance testing of overall model fit also is possible because the fit function is asymptotically distributed as chi-square, adjusted by a constant multiplier (Anderson and Gerbing, 1988).

Anderson & Gerbing (1988) suggest that a two-step approach enables a comprehensive assessment of convergent validity and discriminant validity. Therefore, under the assumption of multivariate normal distribution, the maximum likelihood method was applied to the CFA model for the measurement prior to the estimation of structural model.

The result of the measurement model of the constructs: product features, promotion, brand awareness, perceived quality, perceived value, brand image, brand preference, brand loyalty and brand repurchase is presented in Table 4.4. Hair et al. (2003) recommended the desired value for Good Fit which has also been presented in the Table.

The result shows that Chi-square statistics ($\chi 2 = 1364.31$, df = 383) is significant, the ratio of Chi-square value to degrees of freedom ($\chi 2/df = 3.562$) is less than the cut-off value of 5 as suggested by Hair et al. (2003). Furthermore, other indices such as Comparative Fit Index (CFI) = .922 and Incremental Fit Index (IFI) = .922 are greater than recommended value of 0.9. The Root Mean Square Error of Approximation (RMSEA) is .067 which is less than the recommended value of .08.

The recommend value of Normed Fit Index (NFI) and Relative Fit Index (RFI) is .90 and the values between .80 and .90 are considered marginally acceptable (Hair

et al., 2003). The NFI (.893) and RFI (.873) are at the margin level of desired values and assumed acceptable for this study. Hence, the results of the measurement model show the acceptable fit of the model.

Table 4.4

Measurement Model Fit of the Proposed Model

Goodness-of-fit Statistics	The proposed model	Desired values for Good Fit
$\chi 2/df$	1364.31/383=3.562	< 5.00
RMSEA	.067	< .08
NFI	.895	> .90
RFI	.873	> .90
CFI	.922	> .90
IFI	.922	> .90
PNFI	.737	> .50

Having ensured that a scale (1) conforms to its conceptual definition (2) is unidimensional, and (3) meets the necessary levels of reliability, the final assessment i.e. scale validity must be made. Validity is the extent to which a scale or set of measures accurately represents the concept of interest (Hair et al., 2003). Validity is measured empirically by the correlation between theoretically defined sets of variables; and convergent & discriminant validity are two mostly widely accepted forms of validity (Hair et al., 2003). There is much to gain in theory testing and the assessment of construct validity from separate estimation (and re-specification) of the measurement model prior to the simultaneous estimation of the measurement and structural sub-models (Anderson & Gerbing, 1988). The measurement model in conjunction with the structural model enables a comprehensive, confirmatory assessment of construct validity (Bentler, 1978). Construct validity assesses the degree to which a scale or a set of measured items actually represents the theoretical latent construct that it is designed to measure (Hair et al., 2003). Therefore, it provides

the assurance that the measured items from samples in the survey reflect the real score that is existent in the population (Hair et al., 2003).

Hence, the measurement model provides a confirmatory assessment of convergent validity and discriminant validity. Convergent validity assesses the degree to which two measures of same concept are correlated; and high correlations indicate that the scale is measuring its intended concept (Hair et al., 2003). Discriminant validity is degree to which two conceptually similar concepts are distinct; and low correlation demonstrates that the summated scale is sufficiently different from the other similar concept (Hair et al., 2003). Thus, this study examined the model's construct validity – both in terms of convergent and discriminant validity.

Convergent validity can be assessed from the measurement model by determining whether each indicator's estimated pattern coefficient on its posited underlying construct factor is significant (Anderson & Gerbing, 1988). This is assessed by examining the factor loading estimates for constructs i.e. standardized regression weights and average variance extracted (AVE).

As required for convergent validity, all indicator factor loadings for constructs should be at least .5 and perfectly .7 and highly significant (Hair et al., 2003). As indicated in Table 4.5, all standardized regression weights are mostly over .5 and are significant ($p<.001$) except for two items: Consumer Offer (.376) and Friend Relative Referral (.333).

Table 4.5

Regression Weights of the Main Study (N=580)

Measurement Model	Estimate	Standardized Estimate	S.E.	C.R.	P
Product Features					
Rear Camera	1	0.653			
Front Camera	1.477	0.702	0.099	14.985	0.000
Screen Resolution	1.267	0.747	0.083	15.237	0.000
Display Size	1.079	0.588	0.092	11.703	0.000
ROM	1.145	0.635	0.094	12.169	0.000
Processor	1.559	0.736	0.12	13.023	0.000
RAM	1.427	0.692	0.109	13.04	0.000
Promotion					
Consumer Offer	1	0.376			
Friend Relative Referral	1.122	0.333	0.193	5.807	0.000
Aid Campaign	2.155	0.821	0.397	5.428	0.000
Brand Awareness					
Heard Lot On Brand	1	0.652			
Brand Aware	0.807	0.570	0.071	11.389	0.000
Highly Recognized	0.742	0.542	0.057	12.921	0.000
Perceived Quality					
Reliable	1	0.822			
Excellent Feature	0.861	0.721	0.038	22.802	0.000
Good Quality	0.845	0.791	0.038	22.03	0.000
Perceived Value					
Good Purchase Decision	1	0.884			
Good Value for Money	0.826	0.667	0.054	15.347	0.000
Worth For Money	0.741	0.636	0.055	13.51	0.000
Brand Image					
Credibility	1	0.792			
Brand Trust	1.039	0.823	0.045	22.856	0.000
Brand Pride	0.891	0.745	0.045	20.024	0.000
Brand Preference					
First Preference on Future Purchase	1	0.849			
Better Than Other Brand	0.67	0.702	0.033	20.157	0.000
Brand Preference	0.888	0.864	0.032	28.151	0.000
Brand Loyalty					
Special To Me	1	0.705			
Recommend to Friend Relative	1.142	0.741	0.056	20.224	0.000
Intent to buy same brand	1.353	0.870	0.063	21.373	0.000
Brand Repurchase					
First Choice on Future Purchase	1	0.882			
Search to Repurchase	1.058	0.95	0.029	36.815	0.000
Repurchase	1.039	0.942	0.033	31.5	0.000

Hair et al. (2003) suggest that the variance extracted estimate should equal or .50 for a construct. Higher variance extracted values occur when the indicators are truly representative of the latent construct (Hair et al., 2003). The average variance extracted (AVE) obtained from the CFA study are presented in Table 4.6.

The average variance estimates of the constructs product, promotion and brand awareness obtained from the CFA are .464, .309 and .348 respectively which are less than the threshold level of .50. The lower values of these three constructs indicates that more than half of the variance for the specified indicators is not accounted for by the constructs. Such findings may lead the researcher to explore additional loadings for these indicators on the other construct if theoretically justified (Hair et al., 2003).

Discriminant validity ensures that a construct is actually discrete from other constructs (Hair et al., 2003). The square root of AVE in each construct should exceed the inter-construct correlations associated with constructs in the model (Fornell & Larcker, 1981). Table 4.6 shows the result of discriminant validity. The lower triangular matrix shows the factor correlation matrix with square root of the AVE on the diagonal. The result reveals that the square root of AVE for each constructs is less than the inter-construct correlations associated with construct in the model. For instance, the square root of AVE for the construct perceived value is .737 which is less than correlation estimate between perceived value and brand image of .814. However for the brand preference and brand repurchase, the correlation estimate with perceived value is less than square root of AVE i.e. .706 and .604 respectively. This show there is the problem of discriminant validation in the model and requires fixing it.

Table 4.6

AVE and Factor Correlation Matrix with square root of the AVE on the Diagonal for the main study

	AVE	Loyalty	Product Features	Promotion	Awareness	Perceived Quality	Perceived Value	Image	Repurchase	Preference
Loyalty	0.601	0.775								
Product Features	0.464	0.586	0.681							
Promotion	0.309	0.295	0.323	0.556						
Awareness	0.348	0.689	0.620	0.626	0.590					
Perceived Quality	0.607	0.804	0.798	0.250	0.787	0.779				
Perceived Value	0.544	0.714	0.610	0.253	0.657	0.804	0.737			
Image	0.620	0.929	0.688	0.269	0.854	0.990	0.814	0.787		
Repurchase	0.856	1.010	0.490	0.273	0.625	0.678	0.604	0.791	0.925	
Preference	0.653	1.055	0.597	0.286	0.721	0.831	0.706	0.949	0.965	0.808

Owning to the convergent validation problem, the item scale display size and rear camera with the factor loading .558 and .653 were removed from the construct product features. Similarly, the item friend relative referral with the factor loading .333 was deleted from the construct promotion. Similarly, the item brand aware with factor loading .570 was deleted from the construct brand awareness. Finally, due to high standardized residual covariance of the item worth for money with factor loading .636 for the construct perceived value, the item was deleted. Deletion of these items shows improvement in the average variance extracted. The average variance extraction estimates after deletion of the above items is presented in Table 4.7.

The factor loading on item consumer offer in the construct promotion is 0.376 against the minimum required value of .50. However, this study retains this item since the statistical tool AMOS 21.0 does not support the single item scale.

The average variance extraction estimate of product features, promotion and brand awareness after item deletion are .526, .496 and .554 respectively. Although the AVE of promotion (.496) is at the margin level of .50, this study assumes the validity of this construct. Hence, the average of variance-extracted values obtained from the CFA was .50 and above, thus it confirmed the convergent validity of all the nine latent constructs.

The deletion of items on the constructs product features, promotion, brand awareness and perceived value confirms the convergent validity however the discriminant validation problem still exists in the model with the square root of AVE of the constructs loyalty, product features, perceived quality, perceived value, brand image, brand preference, brand loyalty and brand image less than their respective correlations with other factors. The result with item deletion on various constructs is shown in Table 4.7.

An investigation of the confirmatory factor analysis results revealed all AVE are .5 or greater confirming convergent validity but there exist the problem on discriminant validity. However, this study discards the discriminant validity problem and assesses the SEM model.

Table 4.7

AVE and Factor Correlation Matrix with item deletion for the main study

	AVE	Loyalty	Product Features	Promotion	Awareness	Perceived Quality	Perceived Value	Image	Repurchase	Preference
Loyalty	0.615	0.785								
Product Features	0.526	0.596	0.725							
Promotion	0.496	0.238	0.261	0.705						
Awareness	0.554	0.526	0.423	0.533	0.744					
Perceived Quality	0.608	0.803	0.794	0.215	0.575	0.779				
Perceived Value	0.617	0.726	0.524	0.196	0.443	0.800	0.786			
Image	0.621	0.926	0.685	0.229	0.652	0.989	0.825	0.788		
Repurchase	0.857	0.996	0.500	0.226	0.472	0.678	0.617	0.791	0.925	
Preference	0.653	1.044	0.606	0.240	0.544	0.831	0.715	0.949	0.965	0.808

Structural Equation Modeling

Following the evaluation of measurement model in terms of convergent validity based on confirmatory factor analysis results, a structural equation model (SEM) was tested. Structural equation modeling is a technique that allows separate relationships for each of a set of dependent variables. In its simplest sense, structural equation modeling provides the appropriate and most efficient estimation technique for a series of separate multiple regression equations estimated simultaneously (Hair et al., 2003).

As indicated in Table 4.8, the result shows that Chi-square statistics ($\chi 2$ = 1125.76, df = 276) is significant, the ratio of Chi-square value to degrees of freedom ($\chi 2$/df = 4.079) is less than the cut-off value of 5 as suggested by Hair et al. (2003). Furthermore, other indices such as Comparative Fit Index (CFI) = .925, Normed Fit

Index (NFI) = .904 and Incremental Fit Index (IFI) = .926 are greater than recommended value of 0.90. The Root Mean Square Error of Approximation (RMSEA) is .073 which is less than the recommended value of .08. The Relative Fit Index (RFI) is .887 and the range between .80 and .90 are considered marginally acceptable (Hair et al., 2003). Hence, the results of the measurement model show the acceptable fit of the model.

Table 4.8

The Model Fit Statistics of the Proposed Model

Goodness-of-fit Statistics	The proposed model	Desired values for Good Fit
$\chi 2$/df	1125.76/276=4.079	< 5.00
RMSEA	.073	< .08
NFI	.904	> .90
RFI	.887	> .90
CFI	.925	> .90
IFI	.926	> .90
PNFI	.768	> .50

The model fit statistics shows the model was moderately acceptable. The path relationships between the nine latent constructs (product features, promotion, brand awareness, perceived quality, perceived value, brand image, brand preference, brand loyalty and brand repurchase) were assessed. Seventeen hypotheses from HA1 to HH1 were examined to determine whether significant relationships existed in the proposed model. The summary of the hypothesized paths and the results are presented in Table 4.9.

As shown in the table, sixteen out of seventeen hypothesized relationships were supported in the structural model expect HB3: Promotion -> Perceived Value.

Product features have significant positive effect on brand awareness (HA1, γ = 0.312, p = .000) and perceived quality (HA2, γ = .657, p = .000). However, it has significant negative effect on perceived value (HA3, γ = -0.219, p = .005). This means

that brand awareness and perceived quality are expected to improve by 0.312 and 0.657 standard deviations for a given change in product features of one full standard deviation, when other variables are controlled. Given a change in product features of one standard deviation, the perceived value is expected to worsen by 0.219, when other variables are controlled. Hence, HA1, HA2 and HA3 were supported.

Promotion has significant positive effect on brand awareness (HB1, $\gamma = 0.42$, $p = .000$), however has significant negative effect on perceived quality (HB2, $\gamma = -0.148$, $p = .001$), indicating HB1 and HB2 were supported.

A significant positive effect of brand awareness on perceived quality (HC1, $\gamma = .352$, $p = .000$) and brand image (HC2, $\gamma = .137$, $p = .000$) was found and thus HC1 and HC2 were supported.

Perceived quality has significant positive effect on perceived value (HD1, $\gamma = .949$, $p = .000$) and brand image (HD2, $\gamma = .702$, $p = .000$). Similarly, perceived value has also significant positive effect on brand image (HE1, $\gamma = 0.188$, $p = .001$). Thus HD1, HD2 and HE1 were supported.

Brand image has significant positive effect on brand preference (HF1, $\gamma = .914$, $p = .000$) however has significant negative effect on brand loyalty (HF2, $\gamma = -0.336$, $p = .004$) and brand repurchase (HF3, $\gamma = -0.541$, $p = .000$). Hence HF1, HF2 and HF3 were supported.

Furthermore, brand preference has significant positive effect on brand loyalty (HG1, $\gamma = 1.378$, $p = .000$) and brand repurchase (HG2, $\gamma = 0.936$, $p = .000$). Finally, brand loyalty has significant positive effect on brand repurchase (HH1, $\gamma = 0.503$, $p = .001$). Thus HG1, HG2 and HH1 were supported.

Table 4.9

Path Estimates for the Proposed Model

	Path		Estimate	Standardized Estimate	S.E.	C.R.	P
Product Features	--->	Awareness	0.349	0.312	0.064	5.478	0.000
Product Features	--->	Perceived Quality	0.725	0.657	0.059	12.293	0.000
Product Features	--->	Perceived Value	-0.247	-0.219	0.087	-2.828	0.005
Promotion	--->	Awareness	1.022	0.42	0.168	6.063	0.000
Promotion	--->	Perceived Quality	-0.356	-0.148	0.111	-3.2	0.001
Promotion	--->	Perceived Value	0.14	0.057	0.095	1.468	0.142
Awareness	--->	Perceived Quality	0.347	0.352	0.059	5.917	0.000
Perceived Quality	--->	Perceived Value	0.969	0.949	0.083	11.634	0.000
Awareness	--->	Image	0.126	0.137	0.034	3.739	0.000
Perceived Quality	--->	Image	0.655	0.702	0.061	10.679	0.000
Perceived Value	--->	Image	0.172	0.188	0.053	3.244	0.001
Image	--->	Preference	1.264	0.914	0.058	21.634	0.000
Image	--->	Loyalty	-0.358	-0.366	0.124	-2.89	0.004
Image	--->	Repurchase	-0.734	-0.541	0.102	-7.188	0.000
Preference	--->	Loyalty	0.975	1.378	0.101	9.668	0.000
Preference	--->	Repurchase	0.918	0.936	0.154	5.952	0.000
Loyalty	--->	Repurchase	0.697	0.503	0.217	3.209	0.001

Table 4.10 shows the indirect, direct and total effects of all the variables.

Table 4.10

Standardized Total Effects, Direct Effects and Indirect Effects

Independent Variable	Dependent Variable	Total Effects	Direct Effects	Indirect Effects
Product Features	Brand Awareness	0.349	0.349	0
	Perceived Quality	0.847	0.725	0.121
	Perceived Value	0.573	-0.247	0.82
	Brand Image	0.697	0	0.697
	Brand Preference	0.881	0	0.881
	Brand Loyalty	0.609	0	0.609
	Brand Repurchase	0.722	0	0.722
Promotion	Brand Awareness	1.022	1.022	0
	Perceived Quality	-0.002	-0.356	0.355
	Perceived Value	0.138	0.14	-0.002
	Brand Image	0.152	0	0.152
	Brand Preference	0.192	0	0.192
	Brand Loyalty	0.132	0	0.132
	Brand Repurchase	0.157	0	0.157
Brand Awareness	Perceived Quality	0.347	0.347	0
	Perceived Value	0.336	0	0.336
	Brand Image	0.412	0.126	0.285
	Brand Preference	0.52	0	0.52
	Brand Loyalty	0.36	0	0.36
	Brand Repurchase	0.426	0	0.426
Perceived Quality	Perceived Value	0.969	0.969	0
	Brand Image	0.822	0.655	0.167
	Brand Preference	1.039	0	1.039
	Brand Loyalty	0.718	0	0.718
	Brand Repurchase	0.851	0	0.851
Perceived Value	Brand Image	0.172	0.172	0
	Brand Preference	0.217	0	0.217
	Brand Loyalty	0.15	0	0.15
	Brand Repurchase	0.178	0	0.178
Brand Image	Brand Preference	1.264	1.264	0
	Brand Loyalty	0.873	-0.358	1.232
	Brand Repurchase	1.035	-0.734	1.769
Brand Preference	Brand Loyalty	0.975	0.975	0
	Brand Repurchase	1.598	0.918	0.68
Brand Loyalty	Brand Repurchase	0.697	0.697	0

A graphical representation of the proposed model is presented in Figure 4.1.

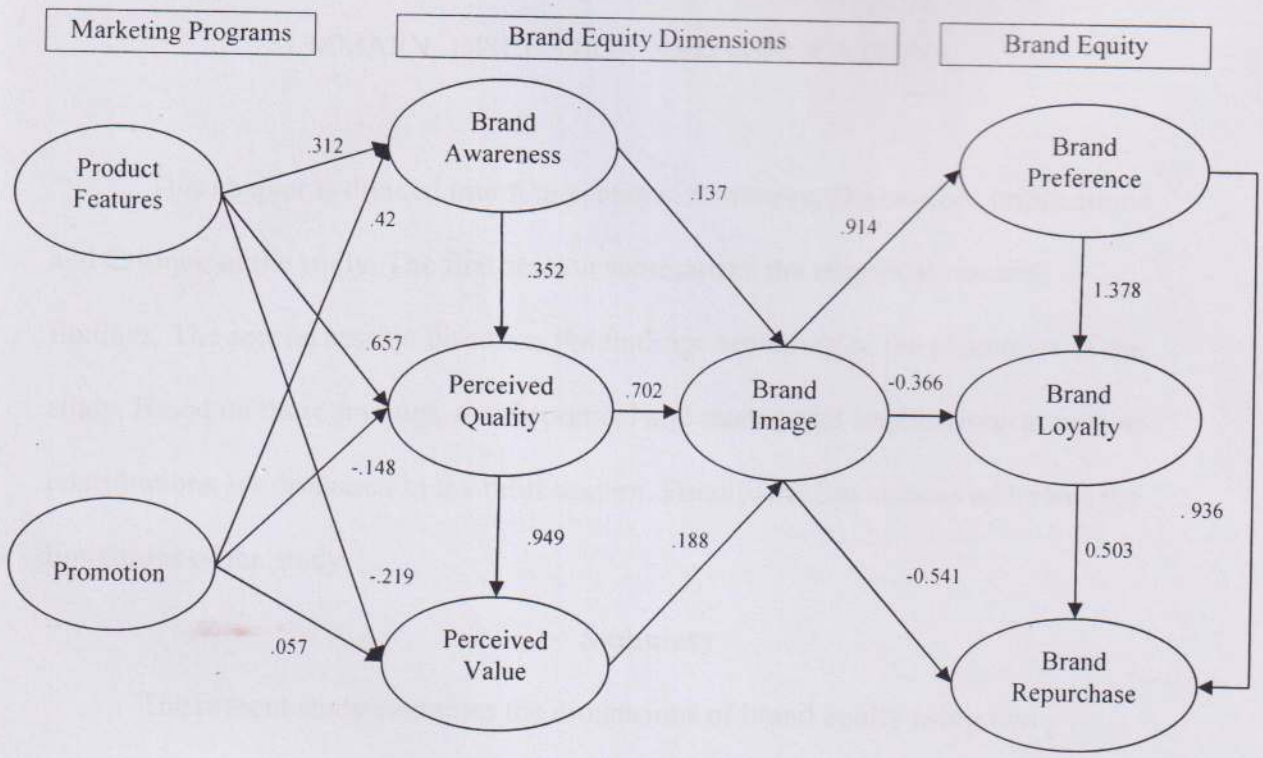

Figure 4.1 The Proposed SEM Model

All hypotheses posited in the research were supported except the hypothesis HB3.

CHAPTER V

SUMMARY, DISCUSSION AND IMPLICATIONS

This chapter is divided into four sections: Summary, Discussion, Implications and Critique of the study. The first session summarizes the empirical research findings. The second session discusses the findings according to the objectives of the study. Based on these findings, the theoretical and managerial implications as well as contributions are discussed in the third session. Finally, the last session addresses the limitations of the study.

Summary

The present study examines the dimensions of brand equity using two customer based brand equity models proposed by Keller (1993) and Aakar (1991) in the smartphone industry. This study commenced with the pretest analysis with the sample size of 100 to filter the initial instrument using exploratory factor analysis and reliability test. Upon filtering the instrument, sample of 580 were collected and model fitness were tested. This was followed by convergent and discriminant validation. Finally, an integrated model was developed and tested to find the causal relationship between various dimensions of brand equity. Table 5.1 summarizes the results of the test hypothesis.

Table 5.1

Summary of Hypothesized Findings

	Hypothesis	Finding
HA1	Product features have significant effect on brand awareness.	Supported
HA2	Product features have significant effect on perceived quality.	Supported
HA3	Product features have significant effect on perceived value.	Supported
HB1	Promotion has significant effect on brand awareness.	Supported
HB2	Promotion has significant effect on perceived quality.	Supported
HB3	Promotion has significant effect on perceived value.	Not Supported
HC1	Brand Awareness has significant effect on perceived quality.	Supported
HC2	Brand Awareness has significant effect on brand image.	Supported
HD1	Perceived Quality has significant effect on perceived value.	Supported
HD2	Perceived Quality has significant effect on brand image.	Supported
HE1	Perceived Value has significant effect on brand image.	Supported
HF1	Brand Image has significant effect on brand preference.	Supported
HF2	Brand Image has significant effect on brand loyalty.	Supported
HF3	Brand Image has significant effect on brand repurchase.	Supported
HG1	Brand preference has significant effect on brand loyalty.	Supported
HG2	Brand preference has significant effect on brand repurchase.	Supported
HH1	Brand loyalty has significant effect on brand repurchase.	Supported

The study proceeds with the examination of the relevant constructs to measure the brand equity in the smartphone industry. The pretest analysis consists of unidimensionality and reliability test with nine constructs i.e. product features, promotion, brand awareness, perceived quality, perceived value, brand image, brand

preference, brand loyalty and brand repurchase with total of 33 items. Upon deletion of scale: battery capacity with the factor loading of .459 in the construct product features, the questionnaire tool was ready for main study with the factor loading greater than .5 for every items and Cronbach's alpha greater than .6 for each construct.

The measurement model of the main study was estimated using confirmatory factor analysis to test the construct validity. Upon deletion of the items display size and rear camera in the construct product features, friend relative referral in the construct promotion, brand aware in the construct brand awareness; worth for money in the construct perceived value; the convergent validation problem was resolved. However, the discriminant validation problem still exists which has not been taken into consideration in this research study.

The first objective was to examine the effect of product features and promotion on brand awareness, perceived quality and perceived value. The results shows significant effect of product features on brand awareness, perceived quality and perceived value. The smartphone features seems to create the sense of awareness and perceived quality in the positive direction however negative for perceived value. Also, promotion has a significant positive effect on brand awareness and perceived quality. However there is no effect of promotion on perceived value.

The second objective of this study was to find the effect of brand awareness, perceived quality and perceived value on brand image. The result shows that brand awareness, perceived quality and perceived value has positive effect on brand image. Also, brand awareness has positive effect on perceived quality. Similarly, perceived quality has strong positive effect on perceived value.

The third objective was to examine the effect of brand image on brand preference, brand loyalty and brand repurchase. Brand image has positive effect on brand preference. However, brand image has negative effect on brand loyalty and brand repurchase.

The fourth objective is to identify the effect of brand preference on brand loyalty and brand repurchase. The results reveal that brand preference has positive effect on brand loyalty and brand repurchase. Similarly, as with fifth objective, brand loyalty has positive effect on brand repurchase.

The summary concludes with the process of brand equity formation. The result shows that marketing programs (product features and promotion) are the stimuli for creating brand equity dimensions (brand awareness, perceived quality, perceived value and brand image). Furthermore, these brand equity dimensions are the antecedences of brand equity (brand preference, brand loyalty and brand repurchase).

Discussion

The discussion section reviews the findings of the study in light with the findings of the previous studies.

The first objective was to examine the effect of features of smartphone and promotion on brand awareness, perceived quality and perceived value. The results showed that product features have significant relationship on brand awareness, perceived quality and perceived value. This indicates that smartphone features seems to create the sense of awareness and perceive quality to the consumers. However, the product features have adverse effect on perceived value. This indicates enhancing the product features also increases the price of the smartphones. Similarly, the result shows that promotion has significant relationship on brand awareness and perceived quality. This indicates that promotion is prerequisite for brand awareness and

perceived quality. This is analogous to Aaker's customer based brand equity framework (1991) and Keller's customer based brand equity framework (2003) which indicates that the marketing programs are the antecedents of brand equity dimensions.

The second objective was to find the effect of brand awareness, perceived quality and perceived value on brand image. The results reveal that brand awareness, perceived quality and perceived value have significant effect on brand image. Previous study by Chen & Tseng (2010) results that brand awareness and perceived quality has enhancing effect on brand image. This concludes brand awareness and perceived quality are the antecedents of brand image. Zeithaml (1988) purports that customers purchase products that offer them the greatest perceived value however Bauer (1960) purports that customers purchase products that pose the least amount of risks. These findings of Zeithaml (1998) and Bauer (1960) concludes that perceived value creates brand image. The same has been observed in this study of smartphones.

The study found brand awareness has significant effect on perceived quality. This indicates that brand awareness enhances the quality perception of the consumers. This is in line with the prior study by Hsu and Hsu (2012).

The results found that perceived quality has significant effect on perceived value. This indicates that consumer value proposition increases with increase in consumers' perception towards the quality of the smartphones. In smartphones, consumers are quality conscious rather than price. This is contradictory with prior study of Pitic, Brad & Pitic (2014) which suggest that not all increase in quality proportionately contributes to increasing customer value.

The third objective was to examine the effect of brand image on brand preference, brand loyalty and brand repurchase. Examination of effect of brand image on brand preference, brand loyalty and brand repurchase results significant effect.

This result shows that brand image has enhancing effect on consumer preference. This is similar to the findings by Saaksjarvi & Samiee (2011) which resulted brand image manifests consumer preference for that brand.

Brand image has adverse effect on brand loyalty. This is contradictory with the prior study of Chen & Tseng (2010) which indicates brand image has enhancing effect on brand loyalty. Also, the result shows that brand image has adverse effect on brand repurchase. This is contrary with the prior study by Habib & Aslam (2014) which indicates that brand image and brand repurchase are unidirectional in nature. Brand image does not lead to brand loyalty and brand repurchase which concludes brand switching in smartphone industry is very high. This may be because smartphone sector is a fashionable product with rapid technological changes, intense industry competition and consumer eagerness to use something new and different.

The fourth objective was to examine the effect of brand preference on brand loyalty and brand repurchase. The results shows that brand preference has increasing effect on brand loyalty and brand repurchase. This was similar to the prior study by Habib & Aslam (2014).

The final objective was to investigate the effect of brand loyalty on brand repurchase. The result reveals that brand loyalty increases brand repurchase. This was analogous to the study of Habib & Aslam (2014).

It was found that brand equity is formed through a process including marketing programs (product features and promotion), followed by brand equity dimensions (brand awareness, perceived quality, perceived value and brand image). This has been discussed in the Keller's Customer based brand equity framework (2003) and Aaker's Customer based brand equity framework (1991). The model shows that marketers need to focus on marketing programs (product features and

promotion) to create brand dimensions (brand awareness, perceived quality, perceived value and brand image) in consumers and subsequently brand equity (brand preference, brand loyalty and brand repurchase).

Implications

This research study provides several theoretical and practical contributions to the current understanding of the dimensions of brand equity in the smartphone industry. Firstly, the study adds to the body of knowledge on customer-based brand equity in the existing technological sector and marketing research. Along with it, the purified scales can be the valuable tool for the study of smartphones in another context. Therefore, this study assists researchers in the smartphone area to identify the role and importance of various constructs in the proposed model by using the scales in an effort to meet the good results.

Secondly, the proposed research presents an integrated model in the customer based brand equity framework. It helps to build the foundation for future research. Researchers can explore how to better assess product features and promotion to achieve brand awareness, perceived quality and perceived value. Further, the assessment of brand awareness, perceived quality and perceived value can be assessed on brand image. Also, the study helps in exploration of brand image to achieve favorable brand preference and to address the gaps that lead to decreased level of brand loyalty and brand repurchase.

Thirdly, the result of this study helps to reveal the consumer preference on the smartphone brand. This may help marketing managers to understand consumer's evaluation of their brand and help them develop clear directions to position their brands based on consumer preferences. In addition, an examination of the relationship among various brand dimensions will advance marketer's understanding of factors

that may dilute or enhance brand strength and provide insights into brand equity management.

Finally, this study provides the theoretical confirmation for the formation of brand equity in the smartphone industry. Along with it, it also provides a practical model which shows how the image of the smartphone can impact a firm market performance, including brand preference, brand loyalty and brand repurchase.

This study shows product features and promotion campaigns were essentially required for brand awareness and to create a positive quality perception of the brand to the consumers. Customers perceive the quality perception as an influencing factor for creating brand image. Further, research results of the study indicate that the image of the brand has negative effect on brand loyalty. This is completely different from the prior research which shows that brand image leads to positive brand loyalty (Chen & Tseng, 2010). The result provides direction for marketers and practitioners that only the brand image is not sufficient for competitive advantage and they should formulate a concrete actionable plan for making the customer prefer to the brand. Moreover, the enhancement of brand preference would support a high level of brand loyalty and subsequently influence customers to repurchase the brand.

Additionally, this research provides a great understanding of the significance of brand preference in retaining brand loyalty and ultimately brand repurchase. Brand image is only the primary requirement and is not the tool for brand loyalty. This indicates that more the consumer prefer the brand; the greater the possibility they will be loyal to that brand and subsequently purchase it. Thus this research provides the much needed evidence that product features and promotion creates brand awareness which makes feel quality perception to the customers. This quality perception leads to brand image and subsequently brand preference, brand loyalty and brand repurchase.

Critique of the Study

There were several limitations recognized in this research, that relate to interpretation and generalization of the findings:

Firstly, the items for the construct product features were created eliciting meaningful information from the daily newspaper. Similarly, the same phenomenon was performed for developing the promotion scales. This resulted in low factor loadings in some of the scales resulting low average variance. Thus in future research, there is a need to adopt the valid scales of product features and promotion relevant to the smartphone industry.

Secondly, Hair et al. (2003) suggests all indicators factor loadings shall be at least 0.50. However, this study retains the scale consumer offer (.376) in the construct promotion although the value is below the prescribed limit (0.50). This was retained as AMOS does not support single item scale for analysis. Further the problem of discriminant validation still exists into the model which has not been taken into consideration in this research study. Hence it is advised for future researcher to adopt the valid scales and ensure that the model is free of construct validation problem.

The third limitation of this research relates to the generalization of the findings. The present study conducted survey at only two districts of Nepal i.e. Kathmandu and Lalitpur. As a result, the findings of this study are limited to their generalizations. Therefore, future researches could evaluate the model's applicability across a wide range of cities in the country.

Fourthly, the research adopts self-administered questionnaire with convenience sampling procedure. This has led to escape the illiterate respondents who were using the smartphone. Further the convenience sampling may lead the collection of biased data not representing the population. Future researches should consider

obtaining a more comprehensive and representative sample using an appropriate sampling and data collection procedure.

Finally, this research study explores brand preference as very essential requirement for brand equity in the smartphone industry. Hence, identifying brand preference dimensions in the smartphone context would be a potential topic for future researches because brand preference dimensions can offer a variety of valuable managerial implications that managers and practitioners can benefit from.

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APPENDIX I

Pre Test Questionnaire

Survey on 'Formation of Brand Equity in Smartphones: A Study in Nepal

Dear respondent (Smartphone Users)

The objective of this survey is to study the perception of smartphone users. You are requested to assess the smartphone that you are using currently. Your response will be used in aggregate form only and your answers will be kept confidential.

A. **Indicate how much you agree or disagree with each statement about the smartphone that you are using. Circle one answer that reflects your opinion**. ("1= strongly disagree", "2=disagree", "3=neither agree nor disagree", "4=agree" or "5=strongly agree" with each statement).

Statements	Strongly disagree	Dis-agree	Neither agree or disagree	Agree	Strongly agree
My mobile performs fast while I use multiple applications simultaneously.	1	2	3	4	5
My mobile performs fast while opening of programs, selecting new applications like games, videos, music etc.	1	2	3	4	5
My mobile can install large number of applications programs and data.	1	2	3	4	5
My mobile has big screen	1	2	3	4	5
My mobile shows clear and bright picture	1	2	3	4	5
My mobile requires less recharge	1	2	3	4	5
My mobile captures good quality pictures from front camera.	1	2	3	4	5
My mobile captures good quality pictures from rear camera.	1	2	3	4	5
Brand of my mobile launches many advertisement campaigns	1	2	3	4	5
My friends/relatives advised me to purchase this mobile brand.	1	2	3	4	5
Brand of my mobile phone provides many consumer schemes/offers.	1	2	3	4	5

B. Indicate how much you agree or disagree with each statement about the smartphone that you are using. Circle one answer that reflects your opinion. ("1= strongly disagree", "2=disagree", "3=neither agree nor disagree", "4=agree" or "5=strongly agree" with each statement)

Statements	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
My mobile has good quality	1	2	3	4	5
Brand of my mobile is highly recognized	1	2	3	4	5
Having this brand of mobile is my pride.	1	2	3	4	5
I am highly aware of the brand of my mobile	1	2	3	4	5
I got much more worth for money than I paid for my mobile.	1	2	3	4	5
I have heard a lot about the brand of my mobile.	1	2	3	4	5
I intend to buy this brand of mobile if I need to buy again	1	2	3	4	5
I preferred this brand over any other brand of mobile phones.	1	2	3	4	5
I trust the brand of my mobile.	1	2	3	4	5
I will probably buy the same brand again.	1	2	3	4	5
I would be inclined to buy the same brand of mobile again.	1	2	3	4	5
I would recommend my friends/relatives to purchase this brand.	1	2	3	4	5
In future purchase, the brand of my mobile will be my first choice	1	2	3	4	5
My mobile has excellent features.	1	2	3	4	5
My mobile is reliable.	1	2	3	4	5
My mobile provides good	1	2	3	4	5

value for money.					
Purchase of this mobile is a good decision.	1	2	3	4	5
The brand of this mobile is special to me.	1	2	3	4	5
The Mobile of this Brand has credibility.	1	2	3	4	5
This brand meets my requirements of mobile better than other brands	1	2	3	4	5
When it comes to make a purchase, the brand of my mobile is the first preference.	1	2	3	4	5

The following are personal data questions that do not interfere with your personal life. Please provide the information as per your best knowledge.

1. **Mention your Gender:** (a) Male (b) Female (c) Other
2. **Your Age group:**

   (a) Under 20 years (b) 20- 25 years (c) 26 - 30 Years

   (d) 31 – 35 Years (e) 36 – 45 Years (f) Above 45
3. **The category that best describes your education level**

   (a) School level (b) SLC (c) Intermediate

   (d) Bachelor (e) Masters and above
4. **The category of occupation that best describes your main stream.**

   (a) Private Service (b) Government service (c) Self employed

   (d) NGO/ INGOs (e) Student (f) other (Specify).....

APPENDIX II

Main Study Questionnaire

Survey on 'Formation of Brand Equity in Smartphones: A Study in Nepal

Dear respondent (Smartphone Users)

The objective of this survey is to study the perception of smartphone users. You are requested to assess the smartphone that you are using currently. Your response will be used in aggregate form only and your answers will be kept confidential.

A. **Indicate how much you agree or disagree with each statement about the smartphone that you are using. Circle one answer that reflects your opinion**. ("1= strongly disagree", "2=disagree", "3=neither agree nor disagree", "4=agree" or "5=strongly agree" with each statement).

Statements	Strongly disagree	Dis-agree	Neither agree or disagree	Agree	Strongly agree
My mobile performs fast while I use multiple applications simultaneously.	1	2	3	4	5
My mobile performs fast while opening of programs, selecting new applications like games, videos, music etc.	1	2	3	4	5
My mobile can install large number of applications programs and data.	1	2	3	4	5
My mobile has big screen	1	2	3	4	5
My mobile shows clear and bright picture	1	2	3	4	5
My mobile captures good quality pictures from front camera.	1	2	3	4	5
My mobile captures good quality pictures from rear camera.	1	2	3	4	5
Brand of my mobile launches many advertisement campaigns	1	2	3	4	5
My friends/relatives advised me to purchase this mobile brand.	1	2	3	4	5

Statements	Strongly disagree	Dis-agree	Neither agree or disagree	Agree	Strongly agree
Brand of my mobile phone provides many consumer schemes/offers.	1	2	3	4	5

B. Indicate how much you agree or disagree with each statement about the smartphone that you are using. Circle one answer that reflects your opinion. ("1= strongly disagree", "2=disagree", "3=neither agree nor disagree", "4=agree" or "5=strongly agree" with each statement)

Statements	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
My mobile has good quality	1	2	3	4	5
Brand of my mobile is highly recognized	1	2	3	4	5
Having this brand of mobile is my pride.	1	2	3	4	5
I am highly aware of the brand of my mobile	1	2	3	4	5
I got much more worth for money than I paid for my mobile.	1	2	3	4	5
I have heard a lot about the brand of my mobile.	1	2	3	4	5
I intend to buy this brand of mobile if I need to buy again	1	2	3	4	5
I preferred this brand over any other brand of mobile phones.	1	2	3	4	5
I trust the brand of my mobile.	1	2	3	4	5
I will probably buy the same brand again.	1	2	3	4	5
I would be inclined to buy the same brand of mobile again.	1	2	3	4	5
I would recommend my friends/relatives to purchase this brand.	1	2	3	4	5
In future purchase, the	1	2	3	4	5

brand of my mobile will be my first choice					
My mobile has excellent features.	1	2	3	4	5
My mobile is reliable.	1	2	3	4	5
My mobile provides good value for money.	1	2	3	4	5
Purchase of this mobile is a good decision.	1	2	3	4	5
The brand of this mobile is special to me.	1	2	3	4	5
The Mobile of this Brand has credibility.	1	2	3	4	5
This brand meets my requirements of mobile better than other brands	1	2	3	4	5
When it comes to make a purchase, the brand of my mobile is the first preference.	1	2	3	4	5

The following are personal data questions that do not interfere with your personal life. Please provide the information as per your best knowledge.

1. **Mention your Gender:** (a) Male (b) Female (c) Other

2. **Your Age group:**

   (a) Under 20 years (b) 20- 25 years (d) 26 - 30 Years

   (e) 31 – 35 Years (f) 36 – 45 Years (g) Above 45

3. **The category that best describes your education level**

   (a) School level (b) SLC (c) Intermediate

   (d) Bachelor (e) Masters and above

4. **The category of occupation that best describes your main stream.**

   (a) Private Service (b) Government service (c) Self employed

   (d) NGO/ INGOs (e) Student (f) other (Specify).....