INNOVATION ATTRIBUTES AND SERVICE BRAND EQUITY

IN THE CONTEXT OF INFORMATION TECHNOLOGY INNOVATIONS

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in the Context of Information Technology Innovations

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DECLARATION OF ORIGINALITY

I, Gözem Güçeri Uçar, certify that

- I am the sole author of this thesis and that I have fully acknowledged and documented in my thesis all sources of ideas and words, including digital resources, which have been produced or published by another person or institution;

- this thesis contains no material that has been submitted or accepted for a degree or diploma in any other educational institution;

- this is a true copy of the thesis approved by my advisor and thesis committee at Boğaziçi University, including final revisions required by them.

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ABSTRACT

Innovation Attributes and Service Brand Equity

in the Context of Information Technology Innovations

Information technology innovations have become a major strategic priority for service companies in building their brands and enhancing their customer-based brand equity. Despite this fact, no theoretical model or empirical studies exist that fully define and analyze the direct relationship between attributes of information technology innovations and customer-based brand equity of service brands. This dissertation fills the gap by building and testing a complete theoretical model relating innovation attributes and dimensions of customer-based brand equity through a series of exploratory qualitative studies, followed by four survey-based quantitative studies focusing on different service industries. We find that there exists a direct relationship between attributes of an information technology innovation and dimensions of customer-based service brand equity, however the nature and strength of this relationship varies based on a variety of factors. In addition to service industry characteristics, three moderators were identified to affect the innovation attributes–brand equity relationship: Perceived brand innovativeness, perceived risk, and perceived voluntariness of use. We define and introduce perceived brand innovativeness as a new construct that needs to be further developed in future empirical studies and used in research focusing on marketing implications of innovations. Our findings not only contribute to theory through the development and testing of a thorough and concrete model relating innovation attributes and service brand equity, but they also have strong implications for practitioners who would like to maximize the impact of information technology innovations on their brands.

ÖZET

Bilgi Teknoloji İnovasyonlarının Özellikleri ve Hizmet Sektörlerinde

Marka Değer Algısı İle İlişkisi

Bilgi teknolojileri alanındaki inovasyonlar, hizmet sektörlerinde faaliyet gösteren markalar için müşteri gözündeki değer algısını arttırmak açısından stratejik bir öncelik haline gelmiştir. Buna rağmen, bilgi teknolojileri inovasyonları ile hizmet markalarının müşteri gözündeki değer algısı arasındaki ilişkiyi tam anlamıyla tanımlayan ve/veya inceleyen çalışmalar henüz gerçekleştirilmemiştir. Bu tezin amacı, bilgi teknolojileri özelinde inovasyon özellikleri ve hizmet marka değer algısı ilişkisini tüm hatlarıyla açıklayan bir kuramsal model ortaya çıkarmak ve bu modeli kapsamlı bir şekilde incelemektir. Bunun için öncelikle keşif amaçlı nitel araştırmalar gerçekleştirilmiş, oluşturulan kuramsal model farklı hizmet sektörlerine odaklanan dört adet nicel saha araştırması ile test edilmiştir. Bilgi teknolojileri inovasyonlarının barındırdığı ve müşteri gözünden algılanan özelliklerinin, hizmet marka değer algısı bileşenleri üzerinde direk etkileri olduğu saptanmıştır. İnovasyonun her bir özelliği, marka değer algısı bileşenleri üzerinde farklı oranlarda etki yaratmakta, ayrıca bu etki sektörden sektöre de farklılık göstermektedir. Bu direk ilişkinin yanısıra, algılanan gönüllülük, algılanan risk ve algılanan marka yenilikçiliği adı altında üç adet aracı değişken saptanmıştır. Algılanan marka yenilikçiliği, bu tez çalışmasının getirmiş olduğu yeni bir değişkendir ve geliştirildiği takdirde inovasyon ile alakalı çalışmalara önemli katkı sağlaması öngörülmektedir. Bu tez, sadece kapsamlı bir kuramsal model geliştirip test etmekle kalmamakta, uygulamada da pazarlama uzmanlarına inovasyon odaklı stratejilerle markalarına en iyi nasıl değer katabilecekleri konusunda yol göstermektedir.

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DEDICATION

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This dissertation is dedicated to my mother, Dr. Meral Güçeri.

Thanks mom, for being so proud of me…

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CHAPTER 1

INTRODUCTION

A company operating in a service industry has two assets that are of most value: Its people, and its brands (Davis, 2002; King and Grace, 2009). In recent years, we have increasingly been observing service companies capitalizing on innovation as a primary branding strategy in their marketing mix, and information technology innovations are usually at the forefront of their marketing communications. A bank may launch a television campaign promoting a new mobile banking application for smartphones. A magazine may feature a hospital's advertisement announcing its new mobile monitoring system for tracking patients' health indicators and treatments. A telecommunications company may attempt to renew its image by launching a social music streaming and sharing portal in order to appeal to a younger customer segment. Information technology innovations are rapidly becoming a central driver in the marketing strategy of many companies that specialize in services, whereas their effects on brand perceptions and customer perceived value have yet to be analyzed. Do marketing activities revolving around information technology innovations indeed make service brands stronger? If so, how can marketers formulate a marketing communication strategy that will maximize the contribution of information technology innovations to the customer-based brand equity (CBBE) of service brands?

In practice, innovation has become a major strategic priority for service companies in building their brands and enhancing their customer-based brand equity. In many cases, innovation is communicated as a primary value proposition offered by the service company to its customers. This is especially interesting in the case of

service companies operating in industries other than information and communication technologies. Even though the delivery of information technology or technological innovations is not among their core benefits, these service companies often promote attributes of service delivery innovations powered by information technology as their main marketing message of their marketing communications. They take for granted that information technology innovations will be perceived as valuable by their customers, and that such communication will positively contribute to the CBBE of the brand.

Despite this assumption by practitioners in service industries, consequences of information technology innovations in the context of brand perceptions remains an understudied topic, especially in services research. While innovation attributes have been studied extensively within the contexts of Diffusion of Innovations Theory (Rogers, 1962; 2003) and various extensions of the Technology Acceptance Model (Davis, 1989; Venkatesh et al. 2003), their effects on the perceived value of the brand have rarely and only partially been examined. The few studies that do analyze the direct relationship between innovation attributes and brand equity dimensions (e.g. Chien, 2013; Morgan-Thomas and Veloutsou, 2013; Wang and Li, 2012) do so through a limited approach, by developing and testing parsimonious models involving only key innovation attributes and brand equity dimensions specific to their context of focus. For example, Wang and Li (2012) develop and validate a research model that depicts the relationships between key attributes of mobile value added services and core factors of brand equity. Similarly, Morgan-Thomas and Veloutsou (2013) analyze the integrated effects of selected innovation attributes and brand equity dimensions on consumers' online experiences with the brand. While

these studies do provide some insight into the interaction of innovation attributes and CBBE, their limited approach restricts their impact and theoretical contribution.

The aim of this doctoral thesis is to explore, define and analyze the relationship between innovation attributes and customer-based brand equity of service companies, in the context of information technology innovations. Our research objectives are threefold:

1. Explore the relationship between information technology innovations, their attributes and the customer-based brand equity of service brands.

2. Construct a research model that defines the effect of perceived innovation attributes of information technology innovations on the customer-based brand equity of service brands.

3. Refine and validate the research model to provide an exhaustive view of the innovation attributes–CBBE relationship.

This study has important theoretical implications concerning innovation–brand interdependency in service industries, due to its focus on theory building and validation. The theoretical contribution of this study is the fact that it is the first complete and robust model that defines the relationship between all attributes of information technology innovations and dimensions of customer-based brand equity in service industries. We not only provide a holistic model defining the direct effects of perceived innovation attributes on the CBBE of service brands, but we also introduce a new moderating construct called perceived brand innovativeness, which we demonstrate to have a significant influence on how information technology innovations may contribute to different dimensions of CBBE. In addition, we show that perceived risk and perceived voluntariness of the customer to use the innovation have a moderating effect on the relationship between innovation attributes and CBBE

dimensions, and that these effects may be experienced differently in different service industries. This dissertation also contributes to marketing practice by providing detailed guidance on how practitioners should build the marketing strategy of information technology innovations so as to maximize their effect on CBBE.

The research consists of three major phases. The exploratory phase involves building a theoretical background and determining the gaps in extant research, followed by a qualitative field study in order to form a general outline of the innovation-brand equity relationship in service industries. The second phase involves building and testing the initial theoretical model through two separate field studies. Analysis of findings results in refinement of the theoretical model and further development of hypotheses. The third and final phase consists of testing and validating the developed theoretical model through two separate field studies based on large-scale consumer surveys focusing on banks and airlines.

The approach adopted throughout this doctoral study was highly interdisciplinary, combining knowledge accumulated in the areas of information systems, services research and marketing. This interdisciplinary approach has been chosen in order to advance scientific and practical knowledge through a holistic view of innovation and band equity. The outcomes of this research are not only intended to fully explain how to maximize the positive effect of information technology innovations on the CBBE of service brands, but they are also contemplated to guide organizations in building and implementing the right innovation strategies that will most adequately complement their brands while maximizing value in the eyes of consumers.

CHAPTER 2

RESEARCH OBJECTIVES AND OUTLINE

Innovation has become a major strategic priority for service companies in building
their brands and enhancing their customer-based brand equity. In their marketing
strategy as well as marketing communication activities, many service companies
feature information technology innovations as the primary value proposition, even
though delivery of information technology is not among their actual core benefits.
While the information technology innovation is merely a new service delivery
channel, it often takes prominence over the company's actual service offering. Such
companies take for granted that their customers will perceive information technology
innovations as valuable, and that marketing communication activities that emphasize
certain attributes of the innovation will positively contribute to the CBBE of the
brand.

The primary objective of this doctoral thesis is to explore, define and verify
the relationship between attributes of information technology innovations and
customer-based brand equity in service industries. We aim to answer the following
research questions: Do information technology innovations positively affect the
CBBE of service brands? If so, which innovation attributes are the main predictors of
CBBE enhancement, which CBBE dimensions are most prominently affected by
these attributes, and what other factors play a role in strengthening/weakening this
relationship?

Our research approach is primarily exploratory and descriptive. This is
because research defining the relationship between innovation attributes and
dimensions of CBBE is rare, and studies that have analyzed this relationship fail to

provide a comprehensive view. In building our research strategy and outline, we primarily followed the research design strategies for exploratory and descriptive research outlined by Iacobucci and Churchill (2010). Specifically, the discovery-oriented model development and testing methodology outlined by Menon et al. (1999) was adopted. We began by building a theoretical background as described in Chapter 3, followed by an exploratory qualitative study to form a preliminary conceptual model of the innovation–brand equity relationship. During this exploratory phase, which is described in detail within Chapter 4, we utilized the critical incident technique through an open-ended web-based survey, followed by a series of focus group discussions. Several rounds of content analyses revealed that the relationship between innovation and service brand equity has four major facets, and that innovation attributes have a direct effect on dimensions of CBBE.

Upon determining the general conceptual model, we developed our main proposition and preliminary research model along with hypotheses. This was followed by a field-based model test through pilot studies focusing on different information technology innovations introduced in two service industries. The findings of these studies, which are outlined in Chapter 5, were used in refining the hypotheses and constructing the final research model.

Chapter 6 provides the final research model and hypotheses, as well as research design and methodology. Chapter 7 outlines the testing and validation of the final model through two survey-based field studies. Customer surveys were developed focusing on an information technology innovation recently introduced in many service industries: Mobile applications for smartphones. The first study was related to the banking industry, and the second one replicated it focusing on airlines. The primary method of analysis was Structural Equation Modeling (SEM).

Validation of the constructs in our measurement model involved confirmatory factor analysis, where reliability and validity were established through composite reliability (CR), average variance extracted (AVE), maximum shared variance (MSV) and average shared variance (ASV). Harman's single factor test was used to test for common method bias in the measurement models of both studies. After validation of the measurement models, structural models were developed and hypotheses were tested. Post-hoc tests were conducted in order to determine group differences between users and non-users of the mobile applications, and customers with high perceived brand innovativeness and mid- to low perceived brand innovativeness. In addition, a post-hoc test was conducted on both data sets in order to determine whether innovation attributes and moderating variables (perceived brand innovativeness, perceived voluntariness, perceived risk) had the same effect on customer perceived value (CPV). This post-hoc test was conducted because in services and brand equity research, CPV is frequently modeled as a dependent variable that is affected by the same independent variables as CBBE (e.g. Baldauf et al., 2003; Erdem and Swait, 1998; Staudt et al., 2014; Sweeney et al., 1999).

The results are discussed in Chapter 8, followed by implications and conclusions in Chapter 9, where the theoretical contribution and implications of the dissertation are discussed as well as implications for practitioners. Limitations of the study are also outlined in Chapter 9, along with future research suggestions.

CHAPTER 3

THEORETICAL BACKGROUND

3.1 Service brand equity

A strong brand has many benefits for a company: It makes the firm stronger and more capable of overcoming uncertainties or competition within a market, it ensures greater customer loyalty as well as greater support from its partners and the surrounding ecosystem, it may even enable the company to operate with higher margins when compared to its competitors (Keller, 2001). In order to build a strong brand, a company must first have a clear understanding of what makes a brand valuable and strong. The value of a brand, holistically referred to as brand equity, has a financial meaning as well as a meaning in marketing (Kimpakorn and Tocquer, 2010). Financially, it is the monetary value of a brand that would be realized when the brand is sold to a new owner (Ambler, 1997). Another approach is to demonstrate financial brand equity as the cash flow difference between the sales price of a branded product and the price of the same product sold with no brand name (Biel, 1997).

Although the financial definition of brand equity has many uses for a company, it reveals little information for marketers who wish to understand issues such as why the brand is preferred by customers, how loyal its customers truly are, or how effective their marketing efforts are in changing or enhancing the perceived value of the brand. It is important to have an understanding of the brand from the customers' perspective, which is far more complex than a simple monetary value, in order to be able to design and implement effective marketing strategies. The

marketing definition of brand equity is often referred to as customer-based brand equity (Keller, 2001).

Yoo et al. (2000, p. 196) define brand equity as "the difference in consumer choice between the focal branded product and an unbranded product given the same level of product features." Aaker (1991, p. 15) describes brand equity as ". . . a set of brand assets and liabilities linked to a brand, its name and symbol, that add or subtract from the value provided by a product to a firm and/or that firm's customers." In order to create a set of brand equity measures that are applicable across markets and products, he groups these brand assets into 5 dimensions and 10 measures, naming them the "Brand Equity Ten" (Aaker, 1996). These dimensions are (1) brand loyalty, (2) perceived quality/leadership, (3) brand associations/differentiation, (4) brand awareness, and (5) market behavior. Brand loyalty is what explains customers' repeat purchase tendencies for a specific brand, and it also embodies customers' level of sensitivity and reactions to price premiums among competing brands. Customers' level of satisfaction with the brand is also a measure of brand loyalty. While perceived quality implies the overall quality level and consistency of a brand in comparison with its competitors, perceived leadership is indicative of its position, popularity and innovativeness. Brand associations are mainly related to image, and therefore incorporate image related dimensions such as perceived value, personality, user profile, and organizational associations. Differentiation is a summary measure that results from the effects of these three association measures. Brand awareness is another important dimension of brand equity, and it has various components such as recognition, recall, top-of-mind, dominance, knowledge, and opinion (Aaker, 1996). Finally, market behavior stands for the collectivity of the brand's performance measures within a market, such as market share or price and distribution coverage.

Keller's definition of brand equity differs slightly from Aaker's, due to the fact that he bases the concept on customers' prior experiences with the brand (Campbell & Keller, 2003). Accordingly, customer-based brand equity (CBBE) is "the differential effect that brand knowledge has on consumer response to the marketing of that brand" (Keller, 1993, p. 2). This conceptualization mainly focuses on the associations dimension identified by Aaker, and entails six "brand building blocks" that constitute the foundation of a strong brand: salience, performance, imagery, judgments, feelings, and resonance (Keller, 2001).

Many additional conceptualizations of customer-based brand equity have been developed since the early 1990s (e.g. Ambler et al., 2002; Franzen and Bouwman, 2001; Pitta and Katsanis, 1995; Srivastava and Shocker, 1991; Yoo and Donthu, 2001), and even though most of these models use different constructs, they do share common dimensions such as brand awareness, perceived quality, and brand associations. In addition, while they have approached the concept of brand equity from different perspectives, they have all focused primarily on consumer goods brands. As a result, the founding literature on brand equity may not always be directly applicable to the valuation of service industry brands.

Zeithaml et al. (1985) have suggested that while service brands can benefit from the existing body of knowledge on brand equity of consumer goods, their nature encompasses fundamental differences that require some changes and adaptations. Specifically, the fact that services are intangible and often inseparable between production and consumption (Kimpakorn and Tocquer, 2010) may create differences in the way consumers assess and determine brand value in their minds. As a result, scholars of service brand management have developed conceptualizations of service brand equity that take this specific nature of services

into account, while still benefiting from the founding conceptualizations within product marketing literature (e.g. Berry, 2000; Davis, 2007; De Chernatony and Segal-Horn, 2003; Grace and O'Cass, 2005; Kim and Kim, 2004).

Kimpakorn and Tocquer (2010) have identified 6 service brand equity dimensions for measuring the perceived value of a service brand from the perspective of customers. The dimensions of this model are (1) brand awareness, (2) perceived quality, (3) brand differentiation, (4) brand associations, (5) brand trust, and (6) brand relationships. While the first 4 of these dimensions are similar to those identified by Aaker (1996), brand trust and brand relationships are directly related to the special characteristics of services that differentiate them from products. Brand trust embodies the brand's reliability, integrity, and intention in the eyes of a customer (Kimpakorn and Tocquer, 2010). Ambler (1997, p. 289) describes trust as "… dynamic and non-linear, slow to build and fast to destroy." Keller (2003) stresses that trust can both enhance and destroy a brand's relationship with its customers. Brand relationships reflect the level of identification customers have with the brand. Consequently, building a healthy, long lasting relationship between the brand and its customers is the ultimate goal of the brand building process (Keller, 2003).

3.2 Innovation attributes and diffusion of innovations

Perceived attributes of innovations (or innovation characteristics) are salient beliefs of potential adopters concerning the characteristics of the innovation under consideration (Van Slyke et al., 2007). Innovation characteristics that have been found to affect adopters' decisions most significantly in empirical studies are relative advantage, complexity, compatibility, trialability and observability (Rogers, 2003; Tornatzky and Klein, 1982). Relative advantage is defined as the degree to which an

innovation is perceived as better than the idea it supersedes. In some studies, "perceived usefulness" (Davis, 1989) is preferred instead of relative advantage due to the difficulty of comparing the advantages of every innovation with products or solutions they supersede. Compatibility is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters. Perceived complexity is defined as the degree to which an innovation is perceived as difficult to understand and use. Trialability is the degree to which an innovation may be experimented with on a limited basis. Finally, observability is defined as the degree to which results of an innovation are visible to others. Moore and Benbasat (1991) have later shown that observability is comprised of two separate beliefs that are related to each other, namely perceived result demonstrability and visibility. The most common method of operationalizing these innovation attributes is using them in conjunction with the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975) or Theory of Planned Behavior (TPB) (Ajzen, 1985) by positioning them as antecedents of "attitude."

In addition to the effect of innovation attributes on adopters' decision process, the rate of diffusion is also affected by the type of innovation decision (Rogers, 2003). The level of voluntariness of the adopter in the decision process has been included in empirical studies as a possible moderator between behavioral intentions and its antecedents (Venkatesh et al., 2003). The type of innovation decision that results in the fastest rate of adoption is adoption by authority. However, unless the authority also mandates exit barriers that discourage users from discontinuing their use, authority innovation decisions may not guarantee sustainability of use. With all other factors being equal, optional and collective

innovation decisions are generally more sustainable than authority innovation decisions (Rogers, 2003).

3.3 Innovation in service industries

Since the second half of the twentieth century, industrial change and technological enhancements have been at the focal point of research and practice. Pavitt (1984) was among the first to develop a taxonomy of innovation patterns, although his taxonomy focused primarily on manufacturing industries and technological innovations. The increased significance of service companies in innovation activities has resulted in an amplification of their effects on macroeconomic and social development (Hipp and Grupp, 2005; Hortelano and Gonzalez-Moreno, 2007). As a result, scholars have started focusing more on the innovation activities of service companies within the past three decades. Based on Pavitt's taxonomy of technical change, Miozzo and Soete (2001) developed a taxonomy specific to the service industry, in which they identified three different types of patterns in relation to innovation. These were supplier-dominated sectors, scale-intensive physical networks and information networks sectors, and science-based and specialized suppliers sectors.

 Sundbo and Gallouj (2000) have shown that different innovative modes exist in the services industry, while emphasizing the differences between innovation in the service and industrial sectors. Hipp and Grupp (2005) have also pointed out that "the character of innovation activities and their organization and implementation differ substantially in the services sector from those of the industrial sector" (p. 518), and have suggested that the creation of an innovation typology for services is necessary. This observation is supported by Hortelano and Gonzalez-Moreno (2007), who

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indicate that it is also difficult to analyze the service industry as a whole with respect to innovation decisions due to its heterogeneity. Based on the six different modes of innovation in services identified by Gallouj and Weinstein (1997), they have analyzed the innovative behavior of Spanish service firms in order to understand whether they developed different patterns of innovation. The authors observed that regardless of their specific industry, each service company was autonomous in its innovation strategy, meaning that companies competing in the same service industry could differentiate themselves from their competitors through the possible diversity in their innovation strategies.

Several studies have focused on the various strategies service firms can employ to differentiate themselves from competitors through innovation, and how they could develop and/or implement these innovations in order to do so. The study by Bitner, Ostrom and Morgan (2008) is a significant example, in which they have suggested a customer-focused approach for service innovation and service improvement called service blueprinting. This study provides practical information and instructions on how to utilize the blueprinting methodology by presenting case study examples. Den Hertog, Van der Aa and De Jong (2010) have suggested a conceptual framework for managing service innovation by proposing six dynamic service innovation capabilities; namely signaling user needs and technological options, conceptualizing, (un-)bundling, co-producing and orchestrating, scaling and stretching, and learning and adapting. They have hypothesized that successful service innovators outperform their competitors in at least some of these capabilities. Salunke, Weerawardena and McColl-Kennedy (2011) have also proposed a conceptual model based on the dynamic capability view of competitive strategy. In their model they identified four strategically significant dynamic capabilities, which

can be listed as episodic learning capability, relational learning capability, client-focused learning capability and combinative capability. Their model and the cases they have analyzed demonstrate that a significant portion of competitive strategy in services is affected by the capabilities of the firm related to learning. A different approach was introduced by Jimenez, Angelov and Rao (2012), who focused on service absorptive capacity of firms as a driver of innovation instead of dynamic capabilities.

While many scholars have focused on the development and implementation strategies of innovation by service companies, some have also investigated ways of maintaining this competitive edge through the protection of intellectual property related to service innovations. Cho, Park and Kim (2012) analyzed and compared the moderating effects of innovation protection mechanisms on the relationship between service innovation and firm competitiveness. Their results were in line with Hipp and Grupp's (2005) proposition, which emphasized the importance of trademarks (brands) for service firms that capitalize on innovation as their competitive advantage. Strong brands help ensure the longevity of a service company's competitive edge. Likewise, the perceived value of a service brand in the eyes of customers, and how that brand differentiates itself from competitors through innovation are major drivers of that company's competitive positioning.

3.4 Adding value to service brands through innovation

Though the mechanisms through which an innovation is created, adopted and diffused within a social system have been studied extensively by social scientists, the consequences of diffusion have received less attention until recently. It is widely accepted that perceived innovation attributes play a central role in determining the

rate at which diffusion occurs (Rogers, 2003), yet what happens to the value of the innovating brand as a result of these attributes has only been analyzed in a few recent studies. Wang and Li (2012) have suggested that the attributes of new mobile commerce services have a direct effect on the brand equity of the service provider. They have shown that m-commerce attributes, namely personalization, identifiability and perceived enjoyment have a significant effect on brand loyalty, perceived quality, brand awareness and brand associations. They have also demonstrated that these brand equity dimensions are determinants of purchase intention. Morgan-Thomas and Veloutsou (2013) have investigated the interrelationship between characteristics of search engines and the perceived brand equity dimensions of search engine service providers. They have analyzed online brand experiences using a research model based on the Technology Acceptance Model (Davis, 1989), uncovering direct and indirect interdependencies between perceived usefulness, perceived ease of use, brand reputation, trust, online brand experiences, satisfaction, behavioral intention, and brand relationship.

A rather different approach was adopted by Chien (2013), who analyzed the influence of brand innovation on customer value by using brand perception and brand equity as double-distal mediators. While the model in this study was quite dissimilar to how relationships between these constructs had been conceptualized before in literature, the presented findings are interesting. They suggest that brand innovation has a direct positive effect on customer value, and that brand perception and brand equity have mediating effects on this relationship.

In their analysis of the role of corporate brands in driving sustainable innovation, Nedergaard and Gyrd-Jones (2013) also bring a different perspective to the innovation–brand equity relationship. They assert the necessity of the innovation

to be closely linked with the brand in the minds of consumers. Moreover, they state that innovation should be voiced in marketing communications so as to add value to the brand in customers' perception.

Although these studies indicate that innovation characteristics and perceived dimensions of brand equity are interrelated in the context of service brands, their empirical models and the constructs they have chosen to analyze are rather dissimilar. Moreover, they each focus on a single service industry, which makes it difficult to assess the generalizability of their results. Review of literature has revealed that there is little knowledge on the relationship between characteristics of an innovation and the customer-based brand equity of service brands. While some empirical evidence exists which suggests the presence of a direct and positive effect of innovation attributes on dimensions of CBBE (e.g. Chien, 2013; Morgan-Thomas and Veloutsou, 2013; Nedergaard and Gyrd-Jones, 2013; Wang and Li, 2012), we assert that seeking further theoretical and empirical knowledge will enable us to build a more generalizable model of innovation attributes and customer-based brand equity of service brands. Since there is little existing knowledge on the innovation–brand equity relationship (especially in the context of service industries), and extant research provides little consensus on the description and direction of the relationship between relevant constructs, we begin by broadly exploring the topic through a qualitative study.

CHAPTER 4

QUALITATIVE STUDY:

EXPLORING THE INNOVATION–BRAND EQUITY RELATIONSHIP

In order to explore the relationship between innovation and brand equity in services, a qualitative study was conducted in two consecutive steps. The first step involved an online survey in an open-ended format, utilizing the critical incident technique (CIT) (Flanagan, 1954). "The critical incident technique consists of a set of procedures for collecting direct observations of human behavior in such a way as to facilitate their potential usefulness in … developing broad psychological principles." (Flanagan, 1954, p. 327) Here, an incident refers to any observable human activity that is sufficient and detailed enough to allow the researcher to make inferences and predictions regarding the person performing the act. The term "critical" is used in order to stress that the person should be conscious of his/her decisions and actions during the specified incident, and the consequences should be definite so that their effects are clear in his/her mind. Accordingly, our survey included instructions and questions that would prompt respondents to share specific incidents in detail, while also giving them clear definitions of the terminology and concepts used within the questions. In order to see whether differences would appear in terms of affected brand equity dimensions or other factors involved in the relationship between innovation and brand equity, respondents were asked to describe two incidents involving service innovations; one being positive and the other negative. Data collected through the CIT survey was content analyzed, then two separate focus groups were held in order to serve two purposes: Triangulation of the CIT results,

and gaining a better understanding of these findings by further analyzing participants' responses.

4.1 Data collection

At this early stage of the study, our aim was to gain an in-depth understanding of how people's perceptions of different service brands were affected as a result of a specific encounter with an innovation. Enabling respondents to give detailed descriptions of events without any limitations would encourage them to share valuable information, which would in turn enable us to fully grasp the effects of innovation on different brand equity dimensions, as well as giving us a better idea of what factors may enhance or hinder these effects. Survey questions were prepared following the systematic approach suggested by Flanagan (1954), Bitner et al. (1990) and Hoffman et al. (1995).

The survey was prepared in two versions, one in English and one in Turkish. The respondents could choose the language in which they wished to view it and respond to it. This was done because English is the primary language of education in many high schools and universities in Turkey, and we wanted to give respondents the option of choosing whichever was more convenient for them in expressing themselves. In the end, nearly half (45%) of the collected surveys were filled in English, and 55% were filled in Turkish. There was no noticeable difference between the depths of information provided within the surveys filled in English or Turkish, while the diversity of vocabulary used was also comparable. Upon the completion of survey collection, the ones that were filled in Turkish were translated into English. Survey questions and instructions for respondents can be found in Table 1 below.

Table 1. CIT Survey Questions and Explanations

Some useful definitions before you begin answering the questions:

Innovation: Innovation is an idea, practice or object perceived as new. It can be anything (a technology, a practice, a way of doing things) that is perceived as new by the person(s) or organization(s) involved.
Service industry: The basic characteristic of a service industry is the production of services instead of end products. Services include attention, advice, experience, discussion, and the production of information.
Examples of service industries:
Government, telecommunication, information technology, healthcare, tourism, media, banking, insurance, waste disposal, financial services, legal services, construction, catering and restaurants, consulting, gambling, real estate, education, sales and customer relations, repair and maintenance, etc.
Service brand: Any brand that is owned by a company or organization operation in a service industry.

5. Please describe a specific incident in which an innovation implemented by a service brand made a POSITIVE impact in your mind regarding the value and positioning of that brand. Please give as much detail as possible; providing the name of the brand, a description of the innovation, why it made an impact in your mind, how it made the brand stick out among others in its industry and other service brands in general.

IMPORTANT REMARK: If you would like to share more than one experience, or experiences with more than one brand, please fill a separate survey for each.

6. Referring to the brand you specified in Question 5, would you define this brand as "innovative" in general? Why?

7. How would you describe the brand you mentioned in Question 5? Please include the following in your description: how would you define its image, positioning, personality, similarities/differences with regard to its competitors, its level of sincerity and conversation with its customers? Feel free to include any other details that come to your mind when you think of this brand.

8. Considering the brand definition you provided above, how did the innovation you described in Question 5 contribute to brand value? In your mind, what aspects of the brand were improved or changed due to this innovation?

9. Please describe a specific incident in which an innovation implemented by a service brand made a NEGATIVE impact in your mind regarding the value and positioning of that brand. Please give as much detail as possible; providing the name of the brand, a description of the innovation, and why it made an impact in your mind. What aspects of the brand were changed or affected negatively due to this innovation?

Our goals were threefold in the design of the survey instrument. First, we wanted to

capture an impactful moment in the memory of each respondent, which marked a

significant positive change in the perceived value of a service brand. In Question 5,

respondents were expected to provide as much detail about the incident as possible,

so that we would be able to identify the shift in brand value, the underlying reasons behind the change in the respondent's brand perception, and which brand equity dimensions were affected and how. Question 5 would also enable us to understand the innovation implemented by the service brand in detail, and classify it according to certain characteristics. Question 6 was designed in order to understand whether there was an expectation for the brand mentioned in Question 5 to be innovative in general. Question 7 was aimed at understanding the details of the existing brand equity dimensions pertaining to the brand mentioned in the respondent's answer to Question 5. This would enable us to fully grasp the service brand equity dimensions and brand positioning as perceived by the respondent. The effect of the mentioned innovation on these brand equity dimensions was further inquired in Question 8. Finally, Question 9 was asking the respondent to repeat the same procedure for an incident that created a negative change in the perceived value of a service brand. Overall, our aim was to give as much flexibility to the respondents as possible in how they chose to answer the questions, so that they would not feel limited in their descriptions. Since this was an exploratory study, the survey instrument was designed to allow for variations in respondents' views and perceptions. Such variety would also improve the richness of our findings.

The survey was distributed virally through a convenience sample, as well as through targeted online social media advertisements on Facebook and Linkedin between Dec. 28, 2012-Jan. 12, 2013. The majority of respondents did not directly know each other, nor did they share any similar backgrounds such as having graduated from the same school or having worked at the same company. The estimated total reach of the survey was approximately 900 people, out of which 118

responded by filling out surveys. Among these, 80 were detailed and specific enough to proceed with the analysis.

We aimed to reach a sample of 20-50 year olds, who were assumed to have the financial freedom to purchase and benefit from services on a regular basis. The male vs. female distribution was slightly favoring males, but with no significant imbalance that may have caused bias. While the percentage of university graduates was in line with the age groups targeted, the percentage of respondents with graduate degrees was much higher than that of the general Turkish population. This was partly due to the targeting of the survey advertisements, which was executed with the assumption that people with higher levels of education would be more willing and able to give detailed written descriptions of their service encounters, and would use a more diverse vocabulary in these descriptions.

All of the respondents were from Turkey. Approximately 80% were residing in Istanbul, while 6% were living abroad, although they were of Turkish origin. The remainder was from Ankara and Izmir, which are both large and highly developed cities. Both location and education distribution could have introduced a bias towards certain brands, but as this is not an aspect of analysis for this study, we presume it does not reduce the validity of the findings.

4.2 Content analysis

Content analysis of the CIT survey responses would enable us to gain an in depth understanding of the innovation–brand relationship. The responses to the 80 collected surveys were initially coded according to brand name, service industry type, type of service innovation (core benefit vs. delivery benefit innovation), part of service affected (product vs. process), role of technology, terms defining innovation,

polarity of customer experience, and terms used to define the direct effect of innovation on perceived brand equity.

The surveys contained 129 unique incidents. A total of 64 different service innovations were identified in these 129 incidents, which were introduced by 47 different brands belonging to 31 different companies. These brands represented 9 service industries, namely information technology, telecommunications, retail sales, airlines, banking and finance, consumer electronics (customer services), e-commerce, education, and health services.

The type of service innovation mentioned was classified in terms of whether it offered a new core benefit or a new way of delivering a core benefit (Berry et al., 2006). For example, banking services such as depositing a cheque, making a wire transfer, opening a debit account are core benefits offered by banks, therefore any novelty brought to the execution of these core benefits would be a core benefit innovation. A mobile banking application for smartphones offers customers a new way of accessing these core benefits, and for the bank to deliver them. Hence, it would be classified as a delivery benefit innovation.

The innovations mentioned by the respondents could also be classified in terms of the role that technology played in their realization. The role of technology refers to whether the innovation that caused the substantial change in the customer's brand equity perception was a technological innovation or a non-technological innovation. Here, a technological innovation is defined as a change in the service that has been powered by technology, such as the introduction of a mobile banking application that allows the customers of a bank to carry out banking services without having to go to a branch or have access to a computer. For instance, iTunes introduced a new way of purchasing and downloading music, turning this industry

into a service industry with its own unique dynamics, while before it was primarily a product industry revolving around the sales of physical items such as CDs. Without a doubt, technology played a central role in the materialization of this change. A non-technological service innovation, on the other hand, is not catered by technology. Examples include Virgin Airlines revolutionizing in-flight snacks by being the first airline to serve ice cream. Another example would be the changes introduced to the privacy settings of an online social networking service which do not require a change in its core technological infrastructure. The technological vs. non-technological classification does not refer to whether the service itself is a technology-intensive service or not.

Another important and clear distinction that could be made between the different incidents mentioned was concerned with the service part affected by the innovation. Halliday and Trott (2010) emphasize that services are a mixture of products and processes. For example, iPhone and Windows Phone both have a clearly identifiable and tangible product component which is the mobile phone device. Yet their business models surpass the physical boundaries of that device and revolve around an entire service ecosystem. In this ecosystem there are other products such as downloadable applications, as well as there are processes such as application downloads, pricing and payment processes for downloads, device and portfolio management over the company's proprietary computer software, etc. As a result, the content analysis included a classification regarding whether the innovation primarily affected a product or process part of the service was necessary.

Surely, the most crucial portion of data came from the analysis of terms used by respondents to define the effect of each innovation on the perceived brand equity of the corresponding service brand. The coding of this information was also the most

challenging part of our analysis, since capturing the depth of information as well as maintaining the diversity of the terminology was central to the reliability of our results. Although it was not directly relevant to our research, we also coded the terms respondents used to describe the innovation itself – without any direct references to the brand – for general data collection purposes, in case it may be necessary in future research. The final piece of information we coded in our data table was the polarity of the customer experience, indicating whether it was positive or negative. The reason for keeping this information was to see whether this polarity created any noteworthy difference in respondents' perceptions. For example, it would enable us to determine whether positive experiences with a service innovation affected a different dimension of brand equity when compared to negative experiences. Approximately 33% of the incidents were concerned with negative experiences, while 67% were concerned with positive brand experiences.

A second round of coding was found necessary in order to enable content analysis of the information provided by the respondents related to the effect of innovation on perceived brand equity. During this process, the terms used to define these effects were dissected and listed one by one on each row. Corresponding information related to service industry, type of service innovation, technological vs. non-technological classification and part of service affected were also listed aside each term. Duplicates were not deleted at this stage in order not to lose any information. At the end of this process, a total of 275 terms were listed, including duplicates.

During the third round of coding, terms that were exact duplicates of each other were eliminated, yet oversimplification or merging of themes was avoided. The final table contained 211 unique themes, which were then classified under 7 service

brand equity dimensions by 2 independent judges. One of the judges was an executive responsible for brand management at a service company, and the other was a Ph.D. student specializing in innovation management and entrepreneurship. The service brand equity dimensions identified in the coded data were (1) brand awareness, (2) perceived quality/leadership, (3) brand differentiation, (4) brand associations, (5) brand trust, (6) brand relationships, and (7) market behavior. Although it is not mentioned among the service brand equity dimensions identified by Kimpakorn & Tocquer (2010), market behavior (Aaker, 1996) was included as a separate dimension since explicit references regarding brands' market behavior were made by several respondents, and it was not possible to classify these under any of the other 6 dimensions.

Once the coding and categorization processes were completed, interjudge reliability was calculated using the percentage agreement method, as well as Perrault and Leigh's (1989) index of reliability, I_r. Overall, there were 167 agreements and 44 disagreements, resulting in 79.1% agreement among the two judges. The strength of I_r over the percentage agreement method is that it takes into consideration the number of coded categories in addition to the number of agreements. The calculated value of I_r was 0.87 with 99% confidence interval limits = 0.87 ± 0.0012, where $z_c =$ 2.33 (Spiegel, 1961). Since interjudge reliability values were satisfactory for the context of social sciences, the disagreements were resolved through communication between the judges and researchers, resulting in a final categorization of the identified unique themes under the 7 brand equity dimensions.

4.3 Exploratory study findings

Our analysis revealed some interesting findings that contained important and novel information regarding Turkish consumers' perceptions of innovation in service industries. In terms of the types of service industries mentioned, information technology was by far the most popular, encompassing 51% of all responses. It was followed by telecommunications (14%) and airlines (12%), while 7 % of the responses were concerned with innovations in various e-commerce industries, such as online bookings for tourism organizations and online food delivery. The remainder of the mentioned industries each represented 5% or less of the responses. When the role of technology in the corresponding service innovation was concerned, 77.2% of the responses were related to technological service innovations, while only 22.8% were concerned with non-technological service innovations. The fact that technology intensive service industries as well as technology intensive innovations dominated the responses indicates that when Turkish customers think of the term "innovation," they primarily associate it with technology and technological change. Hence, the focus of the dissertation was directed towards technological innovations.

In terms of service innovation type, 79% of the incidents were related to delivery benefits, while 21% were concerned with core benefits. This difference is not surprising, considering the fact that it is much easier to make changes on the way a service is delivered to customers when compared to changing the core benefit offered to customers. Moreover, in today's modern and dynamic world, customers' needs pertaining to how services may most effectively be delivered to them change more rapidly when compared to their needs related to the core benefits they require and expect from service brands. As a result, delivery benefit innovations were chosen as the area of focus in this dissertation.

In our classification of the data regarding the parts of services affected by the mentioned innovations, we observed that 65% were concerned with processes, 23% were concerned with products, and 12% affected both. Although services structurally embody both products and processes, it is the latter that lies at their core. Therefore we may naturally expect most of the innovations that create a difference in the brand equity of services to primarily affect their processes.

The service brand equity dimensions most frequently referred to in respondents' descriptions of how the stated innovations affected their perception of the corresponding brand were perceived quality and leadership, brand associations, and brand relationships. The distribution of themes according to service brand equity dimensions were as follows:

- Brand awareness: 3% (100% of occurrences positive)

- Perceived quality/leadership: 16% (93% of occurrences positive, 7% negative)

- Brand differentiation: 2% (100% of occurrences positive)

- Brand associations: 37% (60% of occurrences positive, 40% negative)

- Brand trust: 6% (5% of occurrences positive, 95% negative)

- Brand relationships: 27% (62% of occurrences positive, 38% negative)

- Market behavior: 7% (92% of occurrences positive, 8% negative)

As previously mentioned, brand associations are related to image, and incorporate perceived value, personality, user profile, and organizational associations. When we further classified the themes categorized under brand associations, we observed that 65% of these themes were related to brand personality, which implies that a change or novelty introduced by a service brand has a vivid effect on the "human characteristics" that Turkish consumers associate with

that brand. With a 29% frequency rate, brand value was the second most popular sub-dimension of brand associations among the identified themes. This finding implies that at least for the sample we had at hand, service innovations visibly affected the perceived value of the innovating brand. While most references to brand value were made in positive experiences, which in turn resulted in an enhanced value perception for the innovating brand, a few respondents also indicated that their negative experiences resulted in an overall loss of brand value. References to the functionality and usefulness of the innovation were also observed to contribute to the perceived value of the brand. The other sub-dimensions of brand associations, namely organizational associations and user profile were observed in a total of 5 incidents, and accounted for approximately 7% of the themes categorized under brand associations. Although no generalizations can be made from our sample, this finding implies that the perceived effect of innovation on these sub-dimensions of service brand equity may not be as clearly observable as brand value and personality.

Even though the number of themes associated with perceived quality/leadership accounted for only 16% of all unique themes on our data table, this dimension was mentioned within nearly half (43%) of the incidents, all of which were related to positive experiences. This implies that successful service innovations have a clear effect on the perceived quality and leadership of the innovating brand in the eyes of the consumers. One respondent described how she believed an innovation changed an information technology brand as well as the entire industry it operated in as follows:

… was not just a service innovation, but a market changer at the same time. 'Brand A' was considered dead not more than two decades ago, but today it is the symbol of quality and innovation. It forced its competitors to change their strategy as well and enhanced the overall quality of the market. Today, it is a visionary that makes future products for future needs – needs that we don't even know we have! (Incident #17, CIT Survey, January 2013)

While referring to perceived quality and leadership, the above quote also gives a good example of the market behavior themes that were identified in our coding process. Terms such as "industry changing," "changed customer habits," "expanded target customer group of all players," "caused overall market to prosper" are all indicators of this dimension, and they were all stated for positive experiences with a service innovation, generally –but not always– in parallel with perceived quality/leadership themes.

Another interesting finding was related to brand trust: It was observed that changes in brand trust occurred mainly after negative experiences with a service innovation. Even though many respondents used positive terms related to trust in their description of various brands with which they had positive service encounters, this trustworthy image seemed to have already been there before the introduction of the innovation, and a change in trust was not reported in any of these incidents. On the other hand, some of the stated negative experiences had resulted in a serious erosion of trust. For example, more than one respondent mentioned that the implementation of each user profile page update destroyed his/her trust in online social network service providers. Such remarks hint that the forced and mandatory nature of the innovation may have caused trust issues and an overall negative effect on the brand. If these changes were introduced and implemented as optional choices for the users, it is possible that such a strong reaction could have been avoided.

The effect of innovation on brand-customer relationships was clearly evident from the incidents described by the respondents, as well as the themes referring to this dimension on our data table. The sub-dimensions embodied within brand relationships are brand loyalty, attitudinal attachment, active engagement, and community based relationships. 60% of the themes classified under the brand relationships category were related to attitudinal attachments, while 24% referred to brand loyalty and 13% to active engagement. In many instances, an increase or decrease in brand loyalty was implied in parallel with changes in attitudinal attachment. Quotes such as "this innovation shows that the brand adopts my perspective," "it empowered me," "I just love it, because this brand values me" are all different ways people described why they liked the brand more and why they felt more attached to it after their encounter with the innovation. Negative effects on customers' attitudinal attachments were also reported in the incidents where the respondents described unfavorable experiences with service innovations. Community based relationships were only mentioned in two incidents, and account for 3% of the themes within this category. This specific sub-dimension was mentioned to describe two service innovations, both of which enabled or enhanced communication among the customer community of the brand.

Very few themes were identified directly referring to changes in brand awareness and brand differentiation. The reason for the number of brand awareness themes to be low may have been due to the fact that respondents were asked to describe events in which they already had experiences with these brands, which may have automatically eliminated the brand awareness dimension for many of them while providing much needed depth of information concerning the other dimensions. If they were already highly aware of the brand or innovation when they encountered

it, then it is expected for the innovation to not create a difference in this dimension. These two constructs were later revisited and included in the theoretical model development stages of our study.

4.4 Triangulation and discussion of exploratory study findings

In order to validate CIT survey findings and gain a deeper understanding of our results, two separate online focus groups were held following our content analysis. In setting up the focus groups, the guidelines outlined by Montoya-Weiss, Massey and Clapper (1998) were followed. The first focus group was conducted in real time over an online chat session. The chat lasted approximately 2 hours in a semi-structured format, with a moderate level of moderator involvement. There were 7 participants; 4 male and 3 female, 2 living in Ankara and 5 in Istanbul, between ages 30-41. All of the participants were employed in the private sector, with 2 in higher education, 3 in telecommunications, and 2 in management consulting. The second focus group was conducted over an e-mail chain, which lasted for 3 days since the discussions did not take place in real time. In this focus group, there were 9 participants; 4 male and 5 female, all living in Istanbul, between ages 23-38. 2 of the participants were graduate students, and 7 were private sector employees. 2 participants were working at telecommunications companies, 2 were in banking and finance, 1 in information technologies, 1 in energy services, and 1 was a lawyer. None of the focus group participants had filled out the CIT survey before, so they were all equally unfamiliar with the discussion topic and the questions.

The same questions that were asked in the CIT survey were the main subjects of interest during these sessions. The moderator gave the participants information about the terminology and the overall context of the research. Our goals and

expectations were not stated in detail in order to avoid bias, but the participants were aware of the fact that we were conducting an academic study concerning innovation in services. Since the topic was not of any sensitive nature, the groups were not anonymous, and some of the participants were acquainted with each other. Still, the conversations were fluent and detailed, indicating that the participants felt comfortable enough to share their views, opinions and experiences freely. No judgmental comments were observed.

The information pertaining to the questions of interest was very much in line with CIT survey results. In both of the focus groups, technology intensive service industries and technological innovations were at the core of the discussion. The majority of brands and innovations discussed were in the information technology, e-commerce, and telecommunications industries, with very few exceptions such as Virgin Airlines, Turkish Economy Bank (TEB), or Kahve Dunyasi (a Turkish coffee chain). The variety of brands and innovations mentioned was narrower when compared to the CIT results, although there were no contradictory or different findings in comparison with our content analysis.

Focus group results confirmed that when they were prompted to share their views on innovation, most consumers immediately thought of technology intensive industries and technological innovations. When asked why this was the case, the participants of both groups gave similar answers, stating that the majority of all novel things they observed around them were powered by changes and improvements in technology. Technology changes so rapidly and visibly that it is highly noticeable, and Turkish consumers possibly find it difficult to notice anything else within short time frames. One respondent said that "even if a service company makes a change in terms of customer experience (that does not involve any technological change), it

does not leave much or an impression unless the experience is either drastically different and improves service experience in a revolutionary way, or it is negative and creates immediate dissatisfaction." Consumers have to also experience other brands to be able to make a comparison and feel a difference. Technological innovations, on the other hand, have a much more immediate and obvious impact on the service experience, as well as the difference they create between the brand and its competitors. Quoting from one of the e-mail focus group participants, "technological innovations –especially in technology intensive service industries– allow consumers to immediately see, experience and feel the difference. They immediately leave an impression and are usually memorable."

Aside from the role of technology, other innovation characteristics such as innovation type, part of service affected and perceived usefulness were also included in the discussion, leading us to conclude that "innovation characteristics" are significant determinants of how service brand equity is affected by innovation. This is not surprising, considering the fact that the drivers of innovation acceptance and adoption identified in literature (e.g. Davis, 1989; Rogers, 2003), such as relative advantage, perceived compatibility, perceived complexity, etc. are mainly determined by these characteristics.

One interesting finding that was different than – or complementary to – CIT survey results was that focus group participants believed that the personality, personal background, lifestyle, taboos and other characteristics of a customer would significantly affect his/her perception of brand value and the effect any innovation would have on it. For example, if a person was a mid-level executive in a fast paced industry and living in a big city such as Istanbul, he/she would constantly be exposed to service innovations, and this may desensitize him/her from more subtle changes

made by service brands. A person living in a remote village, on the other hand, may be more conscious and appreciative of non-technological service innovations, such as a new insurance scheme specifically designed for the needs of farmers living in villages. While this was an interesting argument that came up in both focus groups, it is not possible to make any inferences or generalizations at this point regarding its validity. Another argument within the same context was that the consumer's overall level of innovativeness and his/her general attitude towards innovation would impact the effect of an innovation on the perceived brand equity of a service. These arguments indicate that the innovation–brand equity dynamic includes "customer characteristics" as a determinant of the relationship between innovation and service brand equity.

4.5 Innovation–brand equity relationship

Four major factors were identified to have an impact on how innovation affects the perceived value of a service brand in the eyes of customers: (1) Innovation characteristics, (2) service industry characteristics, (3) cultural characteristics, and (4) customer characteristics. Innovation characteristics are attributes of an innovation, which affect the rate at which it is adopted by potential adopters (Rogers, 2003). Other factors such as service innovation type (core benefit vs. delivery benefit), part of service affected (product vs. process), role of technology in the innovation (e.g. technological vs. non-technological), and whether the innovation was forced (mandatory) or optional may also be classified among characteristics of the innovation, although they may not necessarily have a direct effect on the rate of adoption and diffusion.

Perceived characteristics of the innovation directly affect perceived brand equity, because they are the main determinants of whether the innovation will be accepted by the target customer segment, and how much of a difference it will create in their lives. These characteristics were also observed to affect brand associations in our CIT survey and focus groups. Carefully assessing innovation characteristics and determining their fit with the brand, as well as the needs of target customers is the first step in establishing a positive impact on brand equity through innovation. In our study, many of the incidents in which the participants reported negative changes in their value perceptions for the corresponding service brands were resulting from a mismatch between innovation characteristics, brand characteristics, and customer characteristics.

Service industry is the second factor affecting how innovation may impact service brand equity. This refers to industry attributes, such as the type of service industry the innovating brand operates in, the specific characteristics of this industry, characteristics of other players (competitors) within the industry, and the dynamics, forces, or trends that influence the actions of companies and consumers. These attributes play a vital role in how innovation may affect the perceived quality/leadership of the brand, its level of differentiation from others within the market, its market behavior, and customers' overall awareness of the brand. It was observed that service innovations that impacted the dynamics of the industry were the ones that made the strongest impression in the minds of our survey and focus group participants. Such innovations also had a momentous effect on the perceived value of the innovating brand. In order to observe the differences among industries concerning how innovation attributes affect CBBE dimensions, we have conducted multiple studies within different industries as part of the current dissertation.

The third major factor we have identified is related to cultural characteristics within the market. As Fam & Grohs (2007) have stated, "culture is a society's personality" (p. 522). In order to plan and execute effective branding strategies, one has to examine the culture carefully and assess the character of the total society in detail. Factors such as language, knowledge, beliefs, values, laws, customs, music, art, technology, and numerous artifacts are what make a society unique, and should be considered when assessing how an innovation may affect perceived brand value within a market. By knowing the cultural characteristics of the society in which the innovation is to be implemented, marketers can both foresee the effects it may have on brand equity, as well as plan their advertising strategies so that the innovation is promoted in the most effective way possible. While analysis of how cultural characteristics may affect the innovation–brand equity relationship would be valuable, there are many aspects to culture and its effects on consumer perceptions. In order to preserve our focus and abstain from adding further complexity into our analyses, cultural characteristics have been deliberately left outside of this dissertation's scope.

The final factor that was identified to play a central role in how innovation affects perceived brand equity of services is customer characteristics. They play a similar role on customers' perceptions as culture, yet they are different than culture in that these attributes are specific to the target customer segment of the brand and the innovation it introduces. Attributes such as the customer's personality traits, his/her personal background, lifestyle, general attitude towards innovation, and his/her overall level of innovativeness may all play a role in his/her perception of how an innovation affects the value of a service brand. As stated above, if innovation attributes do not fit customer characteristics of the target market, then there is little

chance for success. Such a mismatch may permanently damage service brand equity, and marketers should make careful assessments before going to market.

CHAPTER 5

DEVELOPMENT AND TESTING OF THE PRELIMINARY

RESEARCH MODEL

5.1 Preliminary model and hypothesis development

In addition to providing a general insight on what may influence the relationship
between innovation and brand equity, our exploratory study revealed that a strong
direct relationship exists between perceived innovation characteristics and customer-
based service brand equity. All incidents in the CIT survey data contained similar
references to innovation attributes as antecedents of changes in brand equity
dimensions. Despite this observation, our literature review had revealed only a
limited number of studies that attempt to explain the relationship between innovation
attributes and brand equity dimensions.

Content analysis had revealed 7 brand equity dimensions to be included in the
scale development and testing process, although more information was needed with
regards to innovation attributes. Hence, the data was content analyzed once again to
determine which innovation attributes were mentioned by participants who indicated
that the change in their brand value perception was primarily due to one or more
attributes of the innovation. An example is the response given below:

> I just love the 'Brand A' mobile banking application for smartphones. It not
> only made life easier for me, it also made me think that this brand really
> values its customers and cares about their convenience. Before this I was also
> using the internet banking service offered by this bank. It was successful, but
> it had not changed my attitude towards the bank so drastically. Now I actually
> "like" them! The practicality, performance and ease of use of the application
> caused me to grow more attached to the bank, to the point that I cannot ever
> think of switching. (Incident #33, CIT Survey, January 2013)

In this example, one can identify the innovation attributes that directly changed the participant's brand value perception. While terms such as practicality and performance make references to the relative advantage of the innovation, ease of use is explicitly mentioned. Overall, 98 out of 129 incidents contained references to relative advantage, out of which 91 were related to the perceived usefulness dimension of the construct. Complexity, or its conceptual opposite perceived ease of use, was the second most frequently mentioned characteristic of service innovations, appearing in 89 incidents. The following hypotheses were derived, relating perceived usefulness and perceived ease of use to dimensions of customer-based brand equity of services:

> Hypothesis 1. The perceived usefulness of the innovation has a positive effect on the customer-based brand equity dimensions of the service brand, namely its brand awareness (H1a), brand associations (H1b), differentiation from its competitors (H1c), perceived quality (H1d), brand relationships (H1e), and the level of trust that the customers feel for the service brand (H1f).
>
> Hypothesis 2. The perceived ease of use of the innovation has a positive effect on the customer-based brand equity dimensions of the service brand, namely its brand awareness (H2a), brand associations (H2b), differentiation from its competitors (H2c), perceived quality (H2d), brand relationships (H2e), and the level of trust that the customers feel for the service brand (H2f).

Compatibility and trialability were also among the highly mentioned attributes, the former appearing in 54 of the 129 incidents, and the latter appearing in 38. The following is an example of how the compatibility of an innovation in the education industry affected one respondent's brand value perception:

Our university is well known for its innovative approach in education, and its online services often make our lives easier. So when the university launched a new online course management system, I expected it to be better than the one we had before. While it had more capabilities, it did not integrate well with the operating system on our laptop computers. Errors while uploading documents, only allowing uploads of a very limited number of document formats, incompatibility with the existing e-mail system were some of the issues we had. … I had always looked at 'Brand B' University as a technological leader in the higher education industry, but this experience really made me question its leadership. What's worse is that instead of fixing this new system, the IT department decided to switch back to the old system! … The importance given to the integration of technology into education is part of the reason why university candidates prefer 'Brand B' University, and I worry that such experiences may hurt its image. (Incident #41, CIT Survey, January 2013)

Taking into account incidents similar to the one given above, the following hypotheses were derived regarding the relationship between perceived compatibility and service brand equity:

Hypothesis 3. The perceived compatibility of the innovation has a positive effect on the customer-based brand equity dimensions of the service brand, namely its brand awareness (H3a), brand associations (H3b), differentiation from its competitors (H3c), perceived quality (H3d), brand relationships (H3e), and the level of trust that the customers feel for the service brand (H3f).

Below is an example demonstrating the effect of trialability on changing brand equity perceptions. This incident is about a brand in the telecommunications industry, which was originally perceived by the respondent as "an incumbent that is not known to be innovative" prior to the innovation. In addition to trialability, the respondent also makes references to relative advantage and ease of use of the service innovation while describing how it changed the way she felt about the brand:

'Brand C' created a new broadband fiber and TV package that was clearly positioned with the best pricing and most simple to understand service offering in the market. This brand is normally not known for innovation, and is generally slow, often missing the mark. … I had been a customer of their main competitor for over 10 years, and this new package completely changed my view of the brand. … What is more is that there was a 1 month trial period offered entirely for free! I made my decision to switch once I was sure that the offer met my expectations, enabled me to save money, and was easy to use. (Incident #25, CIT Survey, January 2013)

The following hypothesis explains the effect of trialability on customer-based brand equity dimensions:

Hypothesis 4. The perceived trialability of the innovation has a positive effect on the customer-based brand equity dimensions of the service brand, namely its brand awareness (H4a), brand associations (H4b), differentiation from its competitors (H4c), perceived quality (H4d), brand relationships (H4e), and the level of trust that the customers feel for the service brand (H4f).

Observability was the least mentioned innovation characteristic. This may have been due to the intangible nature of services, which could cause them to be more difficult to observe in comparison to products. Still, it was mentioned in 14 incidents, 5 of which were referring to changes in privacy settings on online social network sites (boyd and Ellison, 2008). The rest of the incidents in which observability was mentioned were mainly referring to the result demonstrability dimension of the construct. An example has been included below:

I really like the map functionality that 'Brand D' introduced on its search results. By this function, your hotel search results are alternatively shown on the city map, including main spots (airport, train station, downtown) with indicative icons for hotels that are available/sold out/etc. on specified dates. Also it is possible to see the prices of any hotel on the map, by just moving the mouse cursor over the hotel icon. It was a minor and 'obvious' innovation, yet it really changed my perception of the brand. It also makes life easier if you are planning a trip with other people, because we can look at the map together and make decisions. I often tell my friends to go on the

'Brand D' website when we are making travel plans together. (Incident #81, CIT Survey, January 2013)

Our hypotheses related to observability and its effects on perceived brand equity dimensions of services can be found below:

Hypothesis 5. The perceived observability of the innovation has a positive effect on the customer-based brand equity dimensions of the service brand, namely its brand awareness (H5a), brand associations (H5b), differentiation from its competitors (H5c), perceived quality (H5d), brand relationships (H5e), and the level of trust that the customers feel for the service brand (H5f).

Although not a characteristic of the innovation itself, voluntariness of use was also mentioned frequently, especially in service experiences involving a negative change in perceived brand equity dimensions. The level of voluntariness felt by the adopter has generally been included in empirical studies as a moderator between behavioral intentions and their antecedents (Venkatesh et al., 2003). This finding is also supported by observations in our exploratory study, where participants' answers have indicated changes in the direction and strength of the innovation attributes – CBBE dimensions relationship based on the level of voluntariness they perceived in the adoption decision. The following hypotheses were derived regarding the moderating effect of voluntariness on the relationship between innovation attributes and perceived brand equity of services.

Hypothesis 6. The relationships between the perceived usefulness (H6a), ease of use (H6b), compatibility (H6c), trialability (H6d), and observability (H6e) of the innovation and service brand equity dimensions are moderated by the

degree to which the adopter perceives the innovation adoption decision to be voluntary.

As stated previously in exploratory study findings, customer characteristics have an effect on the relationship between innovation attributes and CBBE dimensions. In order to better understand their effect, customer characteristics such as age, education level and personal average net monthly income were added to the preliminary model as control variables. As in similar studies focusing on brand equity in service industries (e.g. Pappu and Quester, 2006; Shankar et al., 2003), service usage frequency was also included as a control variable. The preliminary research model that incorporates these hypotheses has been depicted in Figure 1 below.
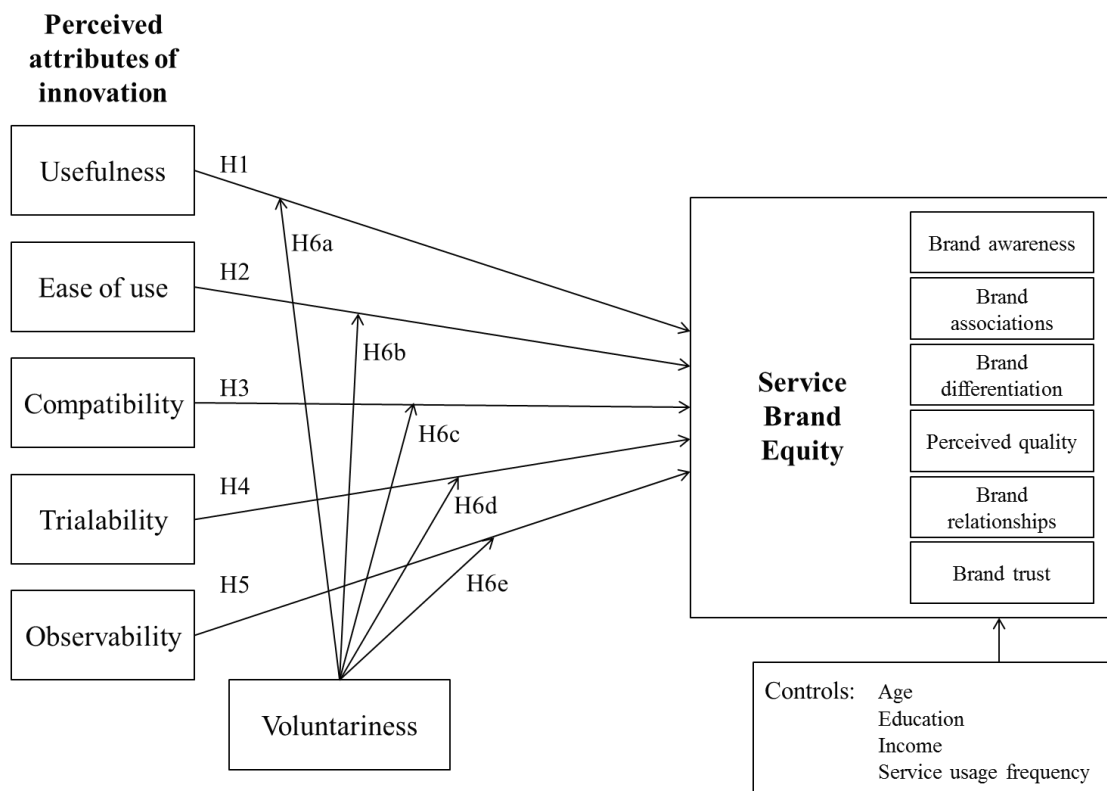
Figure 1. Preliminary Research Model

5.2 Testing the preliminary model: Two pilot studies

Two quantitative studies were designed in order to test the research model depicted in Figure 1. Pilot Study 1 focused on a recent payment and delivery process innovation introduced by an e-commerce brand, while Pilot Study 2 assessed how attributes of mobile banking applications developed for smartphones affect the customer-based brand equity of banks. Several points were taken into consideration in selecting the industries and brands to be included in these studies. We used two studies to be able to cover different innovations and industries and increase the reliability of results.

First, it was observed that the majority of innovations (over 75%) mentioned by the respondents of the CIT survey were powered by technology, with information technology innovations being the most popular. Focus group findings also confirmed that information technology innovations were often noticed more quickly by customers, and made a greater impact in their memories when compared to non-technological service innovations. As a result, the scope of both quantitative studies focused on information technology innovations in services.

The second consideration was the choice of service industries to be included. Brands that operated in technology intensive service industries, such as information technologies and telecommunications, dominated the exploratory study by accounting for 66% of the incidents mentioned in the CIT survey responses. It was also observed that consumers demand and expect innovations from brands in these industries on a regular basis, which requires them to be assessed separately from service industries that are not technology intensive. As a result, we decided to focus on two service industries other than information and communication technologies

(ICT). This way, customer expectations related to innovativeness would be comparable across different brands and industries.

5.2.1 Pilot study 1: E-commerce

E-commerce was chosen as one of the industries to be included in our study due to the fact that it was the third most frequently mentioned service industry, accounting for 7% of the incidents reported in the CIT survey. In this category, the only brand mentioned by more than one CIT survey respondent – as well as being addressed in focus group discussions – was Markafoni, an online private discount shopping site for clothing and accessories. Established in 2008, Markafoni was the market pioneer in Turkey, and is still maintaining the largest customer base in the industry today.

Markafoni features discount campaigns for different clothing and accessory brands on its website. Since each campaign belongs to a different supplier, items purchased from different campaigns had to be placed in separate shopping baskets and were delivered separately to the customer. As a result, the customer had to pay for shipping associated with each delivery, even if the orders were placed during the same session. In order to simplify the ordering process and reduce delivery costs for its customers, Markafoni launched a new feature called MultiBasket. This feature enabled customers to place their orders in the same shopping basket and have them delivered in a single box, even if the items were purchased from different suppliers' campaigns. Once the MultiBasket feature was launched, it replaced the old check-out and delivery process, so the type of innovation decision for customers was mandatory. There was no trial or optional period offered prior to the launch of the new feature, which forced us to omit the testing of Hypotheses 4a-4f at this stage.

5.2.1.1 Measurement instrument

In order to measure the 12 constructs in our proposed research model, we generated 41 scale items based on the items used in literature. The perceived characteristics of the MultiBasket feature were measured using the items developed by Moore and Benbasat (1991). Consistent with their proposition regarding observability, items measuring the observability of the innovation spanned both dimensions of the construct, namely visibility and result demonstrability. Survey items measuring service brand equity dimensions were derived using the scales developed by Yoo, Donthu and Lee (2000), Kimpakorn and Tocquer (2010) and Wang and Li (2012). The list of survey items by construct can be found in Appendix A. All items were measured by 7-point Likert scales, 1 standing for "strongly disagree" and 7 for "strongly agree."

The survey also included demographic questions regarding participants' age, education level, city of residence, and personal average net monthly level. In addition, we asked the frequency at which they shopped from Markafoni in order to understand their level of engagement with the brand. Open-ended questions were also included, asking participants whether they perceived Markafoni as an innovative brand, whether they expected novelties from Markafoni on a regular basis, how they perceived Markafoni's positioning within its market and in comparison to its competitors in terms of leadership and innovativeness.

5.2.1.2 Sample and procedure

The survey was administered online, and consisted of 49 questions. The link to the survey website was distributed via e-mail to 240,000 customers who had shopped from Markafoni both before and after the launch of the MultiBasket feature at least

once. A total of 3701 completed surveys were collected between January 10th and 17th, 2014. Among these, 461 had missing data in more than 10% of the scale items, and 8 had no standard deviation in their responses. Since a total of 3232 participants would also satisfy the sample size requirement of our research model, those with missing data in more than 6 scale items or with no standard deviation in their responses were eliminated in order not to risk the reliability of our results.

The sample characteristics were highly representative of Markafoni's customer base, with 48% of the respondents aged between 25-34 years, while 26% were aged between 35-44, 13% between 18-24, and 9% between 45-54. In terms of city of residence, people living in Istanbul constituted 31% of the survey respondents, followed by Ankara (12%), Izmir (10%), Bursa (4%) and Antalya (3%). The remainder was distributed relatively evenly among various smaller cities within Turkey. The average education level was high when compared to the general Turkish population, with university graduates dominating the sample (68%). People with a graduate degree constituted 18% of the sample, while high school graduates were 13%. 77% of the participants indicated that they were employed at the time of the survey, and 16% were students. The average net monthly income of the respondents was higher than the Turkish average, with 55% of the respondents earning more than 800 USD net income per month.

In terms of the frequency at which they shopped from Markafoni, 49% reported that they shopped once every few months and 36% said they shopped 2-3 times a month. Loyal Markafoni customers who made at least one purchase every week constituted 7% of our sample, whereas occasional users who reported making 1-2 purchases per year were also 7%.

5.2.1.3 Results of Pilot Study 1

The main goal of the study was to identify the relationships among research

constructs as perceived in consumers' minds. Since the research model required a

relatively complex analysis involving multiple relationships between multiple

observed and latent variables, Structural Equation Modeling (SEM) was the preferred

multivariate analysis technique. AMOS 19 software was used for testing the

measurement model as well as the structural model, while all other statistical

procedures were performed using SPSS.

Three methods, namely Cronbach's reliability, exploratory factor analysis

(EFA), and confirmatory factor analysis (CFA) were used to select and assess the

final items that would be used for hypothesis testing.

Step 1: Measure Reliability Check. Cronbach's reliability coefficient alpha was

calculated for the items of each construct. In line with Nunnally and Bernstein

(1994), the cutoff level for item elimination was determined as 0.70. Accordingly,

none of the 41 items were eliminated at this stage. The composite reliability of the

scales have been included in Appendix B.

Step 2: Exploratory Factor Analysis. Following the reliability test, an exploratory

factor analysis was conducted to examine whether the items produce proposed

factors and whether the individual items are loaded on their appropriate factors as

intended. Maximum likelihood extraction method and a promax rotation with Kaiser

normalization were used. Contrary to our expectations, the factor analysis yielded

only 9 factors instead of 11. Items that were intended to measure compatibility

loaded together with the perceived usefulness items. This finding was also reported

in past studies (e.g. Karahanna et al., 1999; Moore and Benbasat, 1991), leading

Moore and Benbasat to conclude that even though the two constructs were found to

be conceptually different, they were highly correlated with each other. These items were grouped under the usefulness construct in the confirmatory factor analysis stage. On the other hand, the result demonstrability and visibility dimensions of the observability construct were clearly separated in our exploratory factor analysis. As a result, these two constructs were modeled as two separate latent variables in the CFA and structural model. Items that were intended to measure brand awareness and brand associations loaded together, which is consistent with the measurement model used by Yoo et al. (2000). Items which made comparative references to other brands, but were initially grouped under perceived quality and brand relationships loaded together with the items measuring brand differentiation. This caused the perceived quality factor to merge with brand differentiation. Finally, items that were cross loading onto multiple factors, as well as those with factor loadings less than 0.35 were eliminated. The resulting model at the end of the EFA had 9 constructs and 37 measurement items.

Step 3: Confirmatory Factor Analysis. The unidimensionality of the constructs identified in the EFA were tested rigorously through a confirmatory factor analysis (CFA). For the unidimensionality check, a measurement model was set to have nine factors (latent variables). Each item was prescribed to be loaded on one latent variable. The solution produced by the maximum likelihood method on AMOS 19 showed that 34 items loaded highly on their corresponding factors, while 3 were problematic in terms of their modification indices, which indicated correlations with other factors, thus risking the predictive power of the model. The final set of items achieved at the end of the CFA is shown in Appendix C. It can be observed that some latent variables had to be measured with 2 observed variables. While it is preferable to include a minimum of 3 items per construct in order to ensure statistical

identification in SEM (Hair et al., 2010; Hall et al., 1999), this is not a strict requirement, especially with a large sample like the one present here.

Testing for Multivariate Assumptions and Common Method Bias. Prior to constructing the structural model, we tested for multivariate assumptions of linearity and multicollinearity, as well as for common method bias. In order to ensure linearity, we did a curve estimation for all relationships in our model, and determined that all relationships were sufficiently linear. Multicollinearity was tested through linear regressions among the independent variables. According to Hair et al. (2010), a common threshold for multicollinearity is a tolerance value of .10, which corresponds to VIF=10 or above, whereas VIF values as low as 4 may be considered depending on the specific characteristics of a study. While VIF was well below 10 for all relationships in our model, collinearity test of result demonstrability yielded VIF=5.61 for ease of use and VIF=4.99 for usefulness. However, the result demonstrability construct was not eliminated from the structural model at this time. Finally, we ran Harman's single factor test for common method variance, in order to see whether our model was affected by common method bias. We ran a factor analysis by forcing all items onto a single factor, and found that the single factor accounted for 38% ($< 50\%$) indicating that no significant common method bias existed (Podsakoff et al., 2003).

Structural Model. We constructed our structural model using the 9 latent variables and 34 observed variables identified in the CFA, as well as the products of standardized composites of voluntariness and each innovation attribute in order to test for interaction effects. The structural model specified the perceived innovation attributes and voluntariness as the exogenous constructs, the product terms as exogenous observed variables, and the brand equity dimensions as the endogenous

constructs. Age, average net monthly income, education level and shopping frequency from Markafoni were also included in the model as control variables that may have a possible effect on the endogenous constructs.

When we ran this initial model, we observed that the regression coefficients for the relationships between usefulness, ease of use and result demonstrability were extremely high, and that the there was a sign reversal for the relationships between ease of use and brand equity dimensions. This confirmed the results of our multicollinearity test, and indicated that result demonstrability had to be removed from our structural model. Standardized solutions of this refined model computed by the maximum-likelihood method using AMOS 19 are reported in Appendix C.

The model goodness-of-fit indices were exceptional, except for CMIN/df, which is due to the fact that the Chi squared value tends to get inflated and may be misleading for sample sizes over 500 (Hair et al., 2010). All of our remaining goodness of fit measures are above commonly accepted cutoff values, indicating adequacy of overall model fit. Despite this fact, Study 1 had limitations that hindered us from observing the full effects of innovation attributes on service brand equity dimensions. The fact that it was focusing on a single service brand launching a mandatory innovation with no trial period could raise questions regarding the validity and generalizability of our results. We were also hindered from testing Hypotheses 4a-f. As a result, a second quantitative study focusing on a different service industry was conducted in order to overcome these limitations.

5.2.2 Pilot study 2: Banking

In order to overcome the limitations of Study 1, to triangulate our results and to establish external validity, we conducted a second pilot study focusing on the

banking industry. Banking appeared in 6 of the 129 incidents in our CIT survey, yet it attracted our interest due to its popularity in the focus group discussions. In addition, all but one of the mentioned incidents in the CIT survey were about the same innovation, namely mobile banking applications for smartphones. While the brands varied, all respondents who mentioned this innovation indicated that it made a significant impact on how they felt about their bank. In addition, the type of innovation decision for mobile banking applications was voluntary, and since the service was offered for free, it was expected to be measurable in terms of perceived trialability.

5.2.2.1 Measurement instrument

In order to be able to derive more generalizable conclusions, we decided not to limit this study to the customers of a single bank. This decision was also influenced by the fact that a different brand in the banking industry was mentioned by each of the qualitative study participants who had reported an incident involving a mobile banking application. The survey was designed so that the respondents had to first indicate which bank they primarily used, and then answer the questions according to their perceptions regarding the brand they indicated. All major players in the banking industry had launched mobile applications for smartphones within the past year, therefore the questions assessing attributes of this innovation were relevant for all respondents.

The measurement instrument was developed in the same fashion as in Pilot Study 1, based on the same scales found in literature in order to ensure comparability of results. The initial item set consisting of 44 items for 12 constructs has been listed in Appendix D. In addition to the scale items, open-ended questions similar to those

used in Pilot Study 1 were included in the survey in order to gain a more in-depth understanding of whether participants perceived their primary bank as innovative, and whether innovation was indeed a general customer expectation from this brand. As mobile banking applications are not mandatory or forced innovations, it was possible to include non-users in the study. As a result, we also included an open-ended question asking why these participants chose not to use the application.

5.2.2.2 Sample and Procedure

The survey was administered online, and consisted of 54 questions. The first set of questions asked for demographic information including participants' age, education level, city of residence, and net monthly income level. In addition, we asked the frequency at which they used internet banking and mobile banking services in order to be able to include these variables as controls in our analysis. The link for the survey website was distributed through targeted online social media advertisements, featured primarily on Facebook and LinkedIn. We targeted smartphone owners who lived in Turkey, were between ages 18 through 65, and were followers of at least one brand in the banking industry. Data collection began on January 5th and continued until February 5th, 2014. According to the statistics on the advertising channels used, the online advertisements were viewed by over 450,000 people, with a 0.4% click-through rate. A total of 764 people attempted the survey, and 392 respondents had filled in at least 50% of the scale items. Among these, 72 were discarded for having missing data in more than 10% of the scale items, and 4 were eliminated due to the fact that there was no standard deviation in their responses.

After the data cleaning stage, we had a remaining sample of 316, which was more than the general SEM requirement of 250, yet below the 500 cutoff indicated

by Hair et al. (2010) for models such as ours with large numbers of constructs. Since this was a replication of Study 1 for triangulation and confirmation purposes, and our model had exceptional model fit indices in both CFA and SEM stages of Study 1, we decided to proceed despite the sample size limitation.

The sample characteristics were representative of the population we had targeted in our online advertisements. 41% of the respondents aged between 25-34 years, and 36% were aged between 35-44. The rest was distributed evenly between the remaining age groups, ranging up to 65 years. People living in Istanbul constituted 55% of the survey respondents, followed by Ankara (11%), Izmir (6%), and Antalya (3%). The remaining 25% was distributed evenly among various smaller cities within Turkey. The average education level was high when compared to the general Turkish population, with university graduates dominating the sample (54%). People with a graduate degree constituted 32% of the sample, while high school graduates were 9.5%. 90% of the participants indicated that they were employed at the time of the survey, and 15% were students. The personal average monthly net income level of the respondents was much higher than the Turkish average, with 41% of the respondents earning more than 5,000 TL (approximately 2,270 USD) per month, and 20% earning between 3,000-5,000 TL (1,360-2,270 USD). The reason for the education and income levels of the respondents to be higher than the average Turkish population is due to the fact that smartphones are relatively expensive purchase items, with retail sales prices averaging at 700 TL (approximately 320 USD) and ranging up to 2,500 TL (1,130 USD). As a result, they have a relatively wealthy customer base with high purchasing power.

5.2.2.3 Results of pilot study 2

The same procedure in Pilot Study 1 was repeated for Pilot Study 2 in forming the measurement model. Cronbach's reliability, exploratory factor analysis, and confirmatory factor analysis were used to select and refine the scale items.

Step 1: Measure Reliability Check. The composite reliability of the scales have been included in Appendix E.

Step 2: Exploratory Factor Analysis. The results of the EFA were very similar to those obtained in Study 1, with the factor analysis yielding 10 factors instead of 12. All item groupings were exactly the same as in Study 1, except for the item QL1 which did not load on the differentiation construct. The resulting model at the end of the exploratory factor analysis had 10 constructs and 36 measurement items.

Step 3. Confirmatory Factor Analysis. A unidimensionality check identical to the one performed in Study 1 was applied to the 10 factors. All items identified in the EFA loaded significantly on their corresponding constructs. The final set of items achieved at the end of the CFA is shown in Appendix E.

Testing for Multivariate Assumptions and Common Method Bias. Prior to constructing the structural model, we tested for multivariate assumptions of linearity and multicollinearity, as well as for common method bias. The curve estimation results confirmed that all relationships in our model were sufficiently linear, and Harman's single factor test revealed no significant common method bias. Similar to Study 1 results for multicollinearity, result demonstrability had borderline VIF values for usefulness (VIF=4.00) and ease of use (VIF=4.05) with respect to the conservative cutoff value of VIF=4. Still, it was not eliminated from the model at this stage.

Structural Model. We constructed our structural model using the 10 latent variables and 36 observed variables identified in the CFA, as well as the products of standardized composites of voluntariness and each innovation attribute in order to test for interaction effects. Age, education and net monthly income were added to the model as controls, as well as the frequencies at which participants used internet and mobile banking services.

When we ran the initial model, we observed the same issues as in Study 1, with extremely high regression coefficients for the relationships involving usefulness, ease of use and result demonstrability. The sign reversal of the relationships between ease of use and brand equity dimensions was also observed. As a result, result demonstrability was eliminated from the structural model. Standardized solutions of this refined model computed by the maximum-likelihood method using AMOS 19 are reported in Appendix F.

The model goodness-of-fit indices were within acceptable limits (Browne and Cudeck, 1993), even though they were hindered by the relative size of the sample with respect to the number of constructs in the model. Overall, the results of Study 2 complemented those found in Study 1, and provided further insight on the effects of trialability and voluntariness. We discuss our results in detail within the following section.

5.3 Discussion of the pilot study results and the preliminary model

5.3.1 Effects of innovation attributes on service brand equity dimensions

Both studies confirmed that attributes of service innovations could directly affect customer-based brand equity. In Pilot Study 1, where we analyzed the case of a

mandatory service innovation in the e-commerce industry that was launched with no

trial period, perceived usefulness and ease of use were the only two innovation

attributes that were found to have an effect on all four dimensions of CBBE in our

research model. While brand awareness was the CBBE dimension most strongly

affected by the usefulness of the innovation, differentiation was the one most

affected by ease of use. This finding is in line with the fact that Markafoni, our e-

commerce brand of interest, was the first in the private discount shopping market to

launch a MultiBasket functionality that offered a price advantage as well as a

simplification of the ordering and delivery processes. In Pilot Study 2, which focused

on the banking industry, the results involving these two innovation attributes were

slightly different. As a voluntary innovation that embodies trialability, mobile

banking applications for smartphones were found to affect CBBE of banks most

strongly through their ease of use. Brand awareness, differentiation and brand

relationships were all strongly affected by the ease of use of the application, while its

effect on trust was slightly weaker. Besides having a significant effect on brand

awareness and differentiation, the perceived usefulness of the application was found

to affect brand trust most strongly. On the other hand, its effect on brand

relationships was not found to be significant. We believe that the type of innovation

decision (voluntariness) and the capability to try the application for free before

making the decision to use it on a regular basis are the reasons behind the different

findings regarding usefulness and ease of use constructs in Pilot Study 2. People who

use this innovation may have adopted it because they found it useful, and since all

major banks currently offer this innovation, the differentiating attribute appears to be

its ease of use rather than its usefulness. This may also indicate that although no

direct effect was observed between trialability and CBBE dimensions, indirect effects may exist and should be investigated in future studies.

Findings regarding the observability of service innovations were interesting both in terms of the operationalization of the construct, and its effects on CBBE dimensions. Items intended to measure observability clearly grouped into two separate factors in both studies, namely result demonstrability and visibility. Result demonstrability had high multicollinearity with perceived usefulness and ease of use in both studies, forcing us to eliminate it from the model. Visibility was found to have no effect on CBBE dimensions in Pilot Study 1, whereas it positively affected brand relationships and differentiation in Pilot Study 2. The insignificant finding in Pilot Study 1 could be attributed to the rather personal nature of the MultiBasket innovation, which is specific to the ordering and delivery process of an e-commerce service. A mobile banking application is relatively more visible by others, enabling this attribute to contribute to a bank's differentiation as well as its relationships with its customers.

5.3.2 Moderation effects and controls

The moderating effect of voluntariness on the relationship between innovation attributes and CBBE dimensions was analyzed and the interaction effect was found to be insignificant in Pilot Study 1, whereas significant interactions were observed in Pilot Study 2. The voluntariness of survey participants when adopting a mobile banking application had a significant positive effect on the brand relationships and differentiation of banks. Evidently, an optional innovation may enable a bank to differentiate itself from its competitors, and customers feel a stronger personal

connection with their bank when they do not feel obliged to adopt the innovation offered.

Voluntariness dampened the positive relationship between perceived usefulness and all CBBE dimensions in Pilot Study 2: As voluntariness increased, the effect of usefulness on perceived brand equity dimensions weakened. This is in line with our interpretation in the previous section, where we stated that usefulness may already be the primary reason behind the voluntary adoption, and is taken for granted as the level of voluntariness increases.

Contrary to its effect on usefulness, voluntariness strengthened the positive relationship between ease of use and brand relationships, while it had no effect on the other CBBE dimensions. When a bank offers an optional innovation that is easy to use, adopters appreciate the fact that the brand takes their needs into consideration. This appreciation leads to stronger feelings for and a deeper personal connection with the brand. If the innovation is mandatory, customers seem to expect a certain level of usability, and therefore the impact becomes weaker.

The last interaction effect was observed between voluntariness and trialability, where voluntariness strengthened the positive relationship between trialability and differentiation. This indicates that a bank can differentiate itself from competitors by offering a free trial opportunity for an optional innovation.

The effects of age, education and personal monthly net income on the dependent variables were controlled for in both studies, and brand trust was the dimension of CBBE which was most significantly affected by these demographic variables. An interesting observation was that education level did not have an effect on CBBE dimensions other than trust in Pilot Study 2, whereas in Pilot Study 1 it had a significant negative effect on differentiation, brand relationships and trust, while it

positively affected brand awareness. People with a higher education level possibly make more involved purchasing decisions when shopping online, which may cause them to be more aware of all brands available in the market, but may decrease the level of connection they share with each brand.

Another control variable was service usage frequency, which was modeled as frequency at which people shopped from Markafoni in Pilot Study 1, and the frequency at which they used Internet and mobile banking services in Pilot Study 2. In Study 1, this variable can also be interpreted as an indicator of customer loyalty, since it directly indicates repeat purchasing behavior. This is in line with the fact that as shopping frequency increases, all dimensions of CBBE also increase, and the dimension that is affected the most by this control variable is brand relationships. This effect was also observed in Pilot Study 2, however in this case the control variable that significantly affected CBBE dimensions was the frequency at which participants used the internet banking services of their bank, rather than the mobile banking usage frequency.

CHAPTER 6

DEVELOPMENT OF THE FINAL RESEARCH MODEL AND HYPOTHESES

6.1 Limitations of the pilot studies

Despite the fact that exploratory research outcomes and preliminary model

development studies revealed important findings with regards to the innovation–

brand equity relationship, further research was necessary to develop a robust

theoretical model that truly reflected the effects of innovation characteristics on

brand equity dimensions. The pilot studies were helpful in confirming that perceived

attributes of information technology innovations had a positive effect on some brand

equity dimensions, however there were several limitations to these studies that

hindered us from deriving clear conclusions.

One such limitation was the fact that the two studies focused on different

innovations, which were not comparable to each other. Our first pilot study focused

on an innovation that was mandatory for all Markafoni customers. As a result, we

were not able to observe the effect of voluntariness on the innovation–brand equity

relationship. In general, it was determined that the development and validation of the

final model should focus on an innovation that is comparable across different service

industries. Since smartphone applications have been introduced in nearly all service

industries within the past two years, and they had been mentioned by several of our

exploratory study participants in the first phase of our research, they were chosen as

the information technology innovation to be focused on in the development and

testing of our final model.

Another issue was the structural difference of the two service industries.

While e-commerce in Pilot Study 1 was a service industry with a product component,

Pilot Study 2 focused on the banking industry, which is considered a pure service industry with no product component and virtually no third party intermediaries in the service delivery process. The brand equity of e-commerce companies may not only be affected by the service they provide to their customers, but it may also be influenced by the brands of their merchandise, as well as the service quality of third pary service providers, such as delivery companies, within their supply chain. Hence, the two studies were not entirely comparable, and therefore could not be used to validate each other.

A final issue experienced in the pilot studies was related to the survey instrument. The 7-point Likert scales used in this earlier stage of the research resulted in highly skewed and kurtic datasets, which required rigorous data preparation and several transformations during the analysis stage in order to enhance adequacy with respect to multivariate assumptions. While the issues of skewness and kurtosis are possible to resolve though transformations, it has been shown that use of a 10-point Likert scale may also prove effective in lowering the overall mean score, and therefore enhancing the fit of the dataset against multivariate assumptions (Dawes, 2008). In order to enhance the normality, skewness and kurtosis of the distribution, the use of a 10-point Likert scale was chosen for the measurement instrument to be used in the final model test.

In addition to the issues outlined above, the open-ended questions in the pilot study surveys revealed that the relationship between innovation attributes and CBBE dimensions was not only affected by participants' perceived voluntariness of use of the innovation. Participants of Pilot Study 2 indicated that the perceived risk of using mobile banking applications not only affected their decision to adopt the innovation, but also their perception of the brand's overall brand equity. This made it clear that

the final research model should also include perceived risk among moderators. Additionally, it was observed in both pilot studies that the extent to which participants perceived the service brand to be innovative had an effect on the relationship between innovation attributes and CBBE. While the perceived brand innovativeness questions were not formulated to allow for a moderation analysis, the variable required more attention in development of the final model.

6.2 Model constructs and development of hypotheses

6.2.1 Conceptualization of brand equity in service industries

Detailed background on customer-based brand equity (CBBE) has been provided in Chapter 3. Customer-based brand equity is a multi-dimensional construct, dimensions of which are often individually operationalized as first-order constructs in empirical studies. While it is also possible to operationalize CBBE as a second-order construct, there is conflicting empirical evidence regarding the representativeness of an overall brand equity (OBE) construct (Yoo and Donthu, 2001) as a second-order factor to represent these individual dimensions (Christodoulides and de Chernatony, 2010; Schivinski, 2013). As a result, we focus on defining and operationalizing dimensions of CBBE individually as first-order constructs.

The first two phases of our study showed that while Aaker's conceptualization of customer-based brand equity is adaptable to service industries, some changes and additions are necessary as follows: (1) Brand awareness and brand associations can be combined into a single dimension, as supported by empirical evidence (Yoo and Donthu, 2001). (2) Conceptualization of perceived quality should

not include items that compare the brand to competitors in order to refrain the construct from interfering with brand differentiation. (3) Brand relationships and brand trust should be included in the conceptualization as CBBE dimensions specific to service brands, as supported by empirical evidence (Kimpakorn and Tocquer, 2010).

The resulting brand equity conceptualization will consist of the following dimensions:

1. Brand awareness/associations: The ability for a customer to recognize or recall the brand and its associated elements. Due to the stronger factor loadings of brand awareness items observed in the prior steps our study, this dimension will simply be referred to as brand awareness.

2. Brand differentiation: The degree to which the service brand is perceived to be different from its competitors.

3. Perceived quality: The extent to which the brand is perceived as superior and consistent in terms of the service experience it offers to its customers.

4. Brand relationships: The perceived level of identification that consumers have with the brand.

5. Brand trust: The perceived ability for the brand to deliver its promises.

6.2.2 Perceived attributes of information technology innovations and their effects on customer-based service brand equity

The exploratory and confirmatory factor analyses conducted as part of our pilot studies revealed that perceived attributes or characteristics of information technology innovations in service industries should be classified as follows: (1) Perceived usefulness, (2) perceived ease of use, (3) trialability, and (4) visibility. Perceived

usefulness can be defined as the extent to which a consumer believes that using the

information technology innovation will enhance his or her service experience (Davis,

1989). Despite the fact that relative advantage, perceived compatibility and perceived

result demonstrability were operationalized separately in our initial conceptualization

prior to the pilot studies, factor analysis outcomes in the preliminary model

development phase revealed that these three constructs could be simplified and

represented by perceived usefulness. Perceived usefulness was not only the most

frequently mentioned innovation characteristic in our exploratory study, but it was

also shown to have a direct positive influence on all dimensions of CBBE in Pilot

Study 1. It also had a significant effect on all CBBE dimensions in Pilot Study 2,

except for brand relationships. Hence, our first hypothesis can be formulated as

follows:

> Hypothesis 1. The perceived usefulness of an information technology
>
> innovation has a positive effect on the CBBE dimensions of a service brand,
>
> namely its brand awareness (H1a), differentiation (H1b), perceived quality
>
> (H1c), brand relationships (H1d) and brand trust (H1e).

Perceived ease of use is the degree to which the consumer believes that using

the information technology innovation will be free of physical and mental effort

(Davis, 1989; Moore and Benbasat, 1991; Van Slyke et al., 2007). Similar to

perceived usefulness, perceived ease of use was also frequently mentioned by the

participants of our exploratory study as an innovation characteristic that directly

affected their perception of brand equity. This was confirmed in both pilot studies,

where perceived ease of use was shown to have a significant positive effect on all

CBBE dimensions. Consequently, we can derive Hypotheses 2 as follows:

Hypothesis 2. The perceived ease of use of an information technology

innovation has a positive effect on the CBBE dimensions of a service brand,

namely its brand awareness (H2a), differentiation (H2b), perceived quality

(H2c), brand relationships (H2d) and brand trust (H2e).

Perceived trialability is defined as the degree to which an innovation may be

experimented with before adoption. The effect of this innovation attribute on CBBE

dimensions could not be thoroughly in Pilot Study 1, due to the fact that the

innovation was introduced as a mandatory change in the service delivery process,

and customers were not given the opportunity to try it prior to adoption. In Pilot

Study 2, on the other hand, its effect on CBBE dimensions was rejected. Despite this

finding, we believe that the construct was not operationalized in a way that was

suitable for the context of smartphone applications as an innovation in service

industries. Our exploratory study findings suggest that if operationalized correctly,

perceived trialability of the innovation should have a direct positive impact on CBBE

dimensions. We formulate this relationship in Hypothesis 3:

Hypothesis 3. The perceived trialability of an information technology

innovation has a positive effect on the CBBE dimensions of a service brand,

namely its brand awareness (H3a), differentiation (H3b), perceived quality

(H3c), brand relationships (H3d) and brand trust (H3e).

We had initially conceptualized perceived visibility of an information

technology innovation as a dimension of observability, which also embodied result

demonstrability as its second dimension. Both pilot studies confirmed that perceived

result demonstrability was indeed highly multicollinear with perceived usefulness,

and did not contribute to the descriptive value of our theoretical model. As a result,

perceived visibility was identified as the fourth independent variable in our model. It

can be defined as the degree to which the innovation and its usage are visible to the consumer, and the extent to which he/she perceives the innovation to be visible to others. While the effect of perceived visibility on CBBE dimensions was rejected in Pilot Study 1, it was supported for the differentiation and brand relationships dimensions of CBBE in Pilot Study 2. Similar to the case of trialability, we believe that better operationalization of the construct in the context of smartphone applications will result in support of Hypothesis 4, which can be formulated as follows:

Hypothesis 4. The perceived visibility of an information technology innovation has a positive effect on the CBBE dimensions of a service brand, namely its brand awareness (H4a), differentiation (H4b), perceived quality (H4c), brand relationships (H4d) and brand trust (H4e).

6.2.3 Moderating effect of perceived brand innovativeness

We define perceived brand innovativeness as consumer' perception of the extent to which a brand introduces novel and creative ideas, services and solutions to the market. Our exploratory study revealed that the perceived brand innovativeness of service brands that specialized in the development and delivery information and communication technologies (ICT) was significantly higher than companies that operated in any other service industry. More than half of the participants pointed out that when they heard the term "innovation," they immediately thought of ICT brands. Many of these participants also indicated that they expected ICT brands to innovate regularly, and that minor innovations by such brands were often not sufficient to generate a substantial shift in their brand value perceptions. This was the main reason

for us to focus on service industries that did not offer ICT as their primary value proposition.

While participants' responses to CIT questions revealed that perceived brand innovativeness had a substantial effect on how innovation characteristics may affect CBBE dimensions, further evidence was necessary for us to include the construct in our research model. Open-ended questions were included in both pilot study surveys in order to understand whether participants perceived the service brands they were evaluating as innovative, whether innovation was an activity that they generally expected from the brand, and how such expectations affected the way innovation characteristics affected CBBE. Answers to these questions strengthened our presumption that the extent to which customers perceived a service brand as innovative potentially moderated the relationship between attributes of information technology innovations and CBBE.

Before deriving our hypotheses related to the moderating effect of perceived brand innovativeness on the innovation attributes–CBBE relationship, we find it necessary to further clarify the meaning of the construct and differentiate it from similar constructs previously conceptualized in empirical studies. One of the earliest conceptualizations of brand innovativeness was done by Keller and Aaker (1998), who classified it as part of brand image and consequently a sub-dimension of brand associations. Many studies that followed identified relevant concepts such as brand extension innovativeness, perceived newness of brand image, and perceived novelty associated with the brand (Daneels and Kleinschmidt, 2001; Lee and O'Connor, 2003; Sethi et al., 2001), yet none of these are fully in-line with our definition of perceived brand innovativeness.

A similar concept called perceived firm innovativeness (PFI) was introduced by Kunz, Schmitt and Meyer (2011), who defined it as "consumers' perception of an enduring firm capability that results in novel, creative, and impactful ideas and solutions." In this study, the effect of PFI on consumer loyalty is analyzed in the context of product industries, however their focus is more on the organization than the consumers and the market. Another similar concept was introduced by Chang and Ko (2014), who define brand leadership is as consumers' perception about the relatively distinctive ability of a brand to continually achieve excellence through trendsetting and brand positioning within an industry segment.

Perhaps the most relevant conceptualization of brand innovativeness was introduced by Barone and Jewell (2014) in the context of advertising. According to their study based on experiments, perceived brand innovativeness moderates the influence of advertising tactic typicality on consumers' attitudes. They find that "the weight given to a comparative ad's content relative to that placed on considerations about the competitive advertising context (tactic) varies based on whether the advertised brand is seen as innovative." Similar to Barone and Jewell's finding, we propose Hypothesis 5 to describe the moderating effect of perceived brand innovativeness on the innovation attributes-CBBE relationship:

Hypothesis 5. The effect of perceived attributes of an information technology innovation on CBBE varies based on the extent to which the innovating brand is perceived as innovative. Specifically, the effects of perceived usefulness (H5a), perceived ease of use (H5b), trialability (H5c) and visibility (H5d) on CBBE, namely its brand awareness, differentiation, perceived quality, brand relationships and brand trust are moderated by the extent to which the brand is perceived as innovative.

6.2.4 Moderating effect of perceived voluntariness of use

Moore and Benbasat (1991) define perceived voluntariness of use as "the degree to which use of the innovation is perceived as being voluntary, or of free will." They indicate that while many studies assume that they have "voluntary" adopters of innovations because adoption is not strictly mandatory (as in the case of smartphone applications), some adopters may in fact feel a degree of compulsion. This has also been demonstrated in Pilot Study 2, where participants who had downloaded the mobile banking application to their smartphones indicated different levels of perceived voluntariness in their decision to use the application, despite the fact that the application is offered for free and with no special features (except for mobility) that mandate its usage.

The level of voluntariness of the adopter in the decision process has been included in empirical studies as a possible moderator between behavioral intentions and its antecedents (Venkatesh et al., 2003). As a result, we had hypothesized in Pilot Study 2 that perceived voluntariness of use would also moderate the relationship between perceived attributes of information technology innovations and CBBE of service brands. This hypothesis was strongly supported for perceived usefulness, and weakly supported for perceived ease of use and trialability, while it was refuted for perceived visibility. Consequently, we propose Hypothesis 6 as follows:

> Hypothesis 6. The effect of perceived attributes of an information technology innovation on CBBE varies based on the extent to which use of the innovation is perceived as being voluntary. Specifically, perceived voluntariness of use associated with an information technology innovation will moderate the effect of the innovation's perceived usefulness (H6a), perceived ease of use (H6b) and trialability (H6c) on CBBE.

Based on the pilot study findings, we do not expect a moderating effect of voluntariness on the relationship between perceived visibility and CBBE.

6.2.5 Moderating Effect of Perceived Risk

Perceived risk is defined as the uncertainty regarding possible negative consequences of using a product or service, or "the potential for loss in the pursuit of a desired outcome" of using a service (Featherman and Pavlou, 2003). In empirical studies, it has mostly been measured through Likert scales assessing the perception of undesirable consequences or attributes associated with the service. Depending on the context in which it is being assessed, perceived risk can be defined as:

i.   Performance risk: "The possibility of the product malfunctioning and not performing as it was designed and advertised and therefore failing to deliver the desired benefits." (Grewal et al., 1994) While this definition of performance risk seems to be product focused and unrelated to services, our focus is on mobile applications, which do entail a certain degree of performance risk. If not designed properly, such an application may fail to deliver desired benefits. As a result, the definition of performance risk in our context can be rephrased as the possibility of the application malfunctioning and not performing as it was designed and advertised.

ii.   Financial risk: "The potential monetary outlay associated with the initial purchase price" as well as "the recurring potential for financial loss due to fraud." (Featherman and Pavlou, 2003).

iii.   Time risk: Loss of time while researching and making the purchase, learning how to use a product or service, and not being able to fully benefit from it in the end. (Featherman and Pavlou, 2003)

iv. Privacy risk: "Potential loss of control over personal information."

(Featherman and Pavlou, 2003)

v. Overall risk: A general measure of perceived risk when all criteria are

measured together.

Gürhan-Canlı and Batra (2004) have empirically shown that perceived risk

moderates the effects of corporate image on product evaluations. Similarly,

perceived risk is often modeled as a moderator of the hypothesized relationships in

technology acceptance literature, especially in the context of e-services adoption (e.g.

Featherman and Fuller, 2003; Lee, 2009). Inferences made to perceived risk by

participants of Pilot Study 2 also suggested the presence of a similar effect in the

context of the relationship between innovation attributes and CBBE. We formulate

this moderation effect as follows:

Hypothesis 7. The perceived risk associated with an information technology

innovation will moderate the effect of the innovation's perceived usefulness

(H7a), ease of use (H7b), trialability (H7c) and visibility (H7d) on CBBE.

6.3 Final research model

The hypotheses developed in the previous section have been included in the final

research model as shown in Figure 2 below.
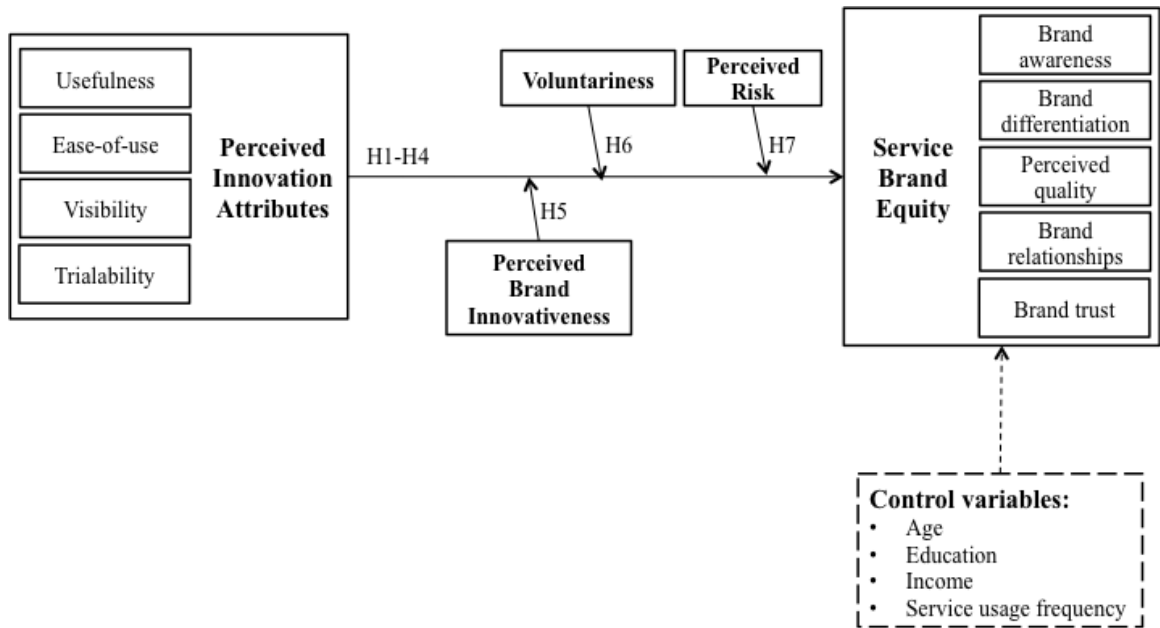
Figure 2. Final research model

Control variables were also included in the model in order to ensure that the variation in the dependent variables is indeed due to the effect of the independent variables and moderators on CBBE, rather than the effect of demographics and/or the participant's general service usage behavior.

The above research model was tested and validated through two field studies based on customer surveys, which are described in detail within Chapter 7.

CHAPTER 7

TESTING AND VALIDATION OF THE FINAL MODEL

This chapter presents the final part of the dissertation, which consists of testing and

validation of the research model depicted in Figure 2. As previously stated, it was

determined that the final model test should focus on pure service industries, which do

not have any product component or third-party brands that the customer interacts

with throughout the service experience. As a result, while banking remained within

our focus in Study 1, e-commerce was exchanged with airlines in Study 2, which was

indeed the third most frequently mentioned service industry (succeeding information

technology and telecommunications industries) during our exploratory study outlined

in Chapter 4.

In order to maximize comparability of the two studies to each other, it was

decided that the information technology innovation within focus of both studies

should be the same. As a result, it was important to identify an information

technology innovation that had been introduced in both industries relatively recently.

Smartphone applications, or "mobile apps" as they are commonly known, fit this

description well since they have rapidly transformed our service experience in both

industries within the past few years. A mobile app is a computer program designed to

run on smartphones, tablet computers and other mobile devices. Apps have entered

our lives in 2008, and since then have penetrated into virtually all service industries.

Some apps are free while others must be paid for, and their price may vary from less

than 1 USD up to nearly 1000 USD. In the case of mobile apps utilized as service

delivery enhancement tools in banking and airline industries, the app is usually

offered to customers for free. While the initial uptake of this information technology

innovation was not instant, we have experienced the expeditious penetration of

mobile apps into both banking and airline industries within the past two years.

7.1 Research design and methodology

7.1.1 Measurement instrument and questionnaire design

Similar to the process followed during the pilot studies in our model development

phase, scale items in both studies were developed primarily based on items used in

literature, with adaptations and minor additions to fit the specific characteristics of

mobile applications and the industries under focus. The perceived characteristics of

mobile apps and the perceived voluntariness of their use were measured using the

factor structure and items validated in the pilot studies, which had primarily been

adapted from Moore and Benbasat's (1991) "instrument to measure the perceptions

of adopting an information technology innovation." Similarly, the factor structure

and survey items measuring service brand equity dimensions in the two pilot studies

were also used in the final model testing and validation phase. These items had been

derived using the scales developed by Yoo, Donthu and Lee (2000), Kimpakorn and

Tocquer (2010), and Wang and Li (2012). The questionnaires used in Study 1 and

Study 2 can be found in Appendix G and Appendix H.

The measurement instruments that differ from the pilot studies are the items

used to measure the hypothesized moderators perceived brand innovativeness and

perceived risk. Perceived risk dimensions relevant to mobile apps were identified as

performance risk, financial risk, time risk, privacy risk and overall risk. The related

items were adapted from Featherman and Fuller (2003), and Featherman and Pavlou

(2003). Perceived brand innovativeness, on the other hand, was a more difficult

construct to operationalize due to the fact that it had not been studied extensively before and very few scale items were available in literature. As a result, while using the PFI scale items developed by Kunz, Schmitt and Meyer (2011) as a reference, some items had to be changed so as to reflect the perceived innovativeness of the service brand rather than the company, and to fit the conceptualization introduced in the current study. The final measurement instrument consisted consisted of six items, as it can be seen from the list of items pertaining to survey questions 10 through 15, abbreviated INN in Appendices G and H.

An important consideration regarding questionnaire design was the possible necessity of using different scale items to assess CBBE in two different service industries. A careful review of services marketing and brand equity literature revealed that while some items may differ from industry to industry, these items are mainly related to the brand associations dimension (e.g. Berry, 2000; Davis, 2007; De Chernatony and Segal-Horn, 2003; Grace and O'Cass, 2005; Kimpakorn and Tocquer 2010), which had mostly been eliminated in the EFA and CFA phases of our pilot studies. All other measurement instruments associated with CBBE of banks and airlines were identical. As a result, the same set of items was used in both questionnaires, with the only difference being the choice of words referring to the industry and brand of focus.

In addition to scale items, both surveys included demographic questions as well as questions that enabled the identification of participants' service and app usage behavior. This was done in order to allow for the analysis of control variables and their effects on the model. The questionnaire was organized so that it began with a set of screening questions, which would allow the administrator of the survey to identify who should be included as a participant in the study and who should not.

Questions regarding the participant's preferred brand in the relevant service industry and his/her service and app usage behavior followed the screening questions. Brand innovativeness items were included as the first scale items in order not to cause bias in the moderator analysis. These were followed by perceived innovation attributes, perceived voluntariness and perceived risk items. The final set of items that came before the demographic questions were related to the measurement of CBBE dimensions, which were followed by four items measuring overall brand equity (Yoo and Donthu, 2001) to allow for post-hoc analyses and verification.

Both questionnaires were administered so as to enable the participant to evaluate the CBBE and mobile app attributes of the brand they primarily used in the relevant service industry. In order to ensure this, while reading each question the administrator of the survey replaced XXXXX with the brand identified by the participant in Question 5.

A major difference of the survey instrument used in Study 1 and Study 2 from those used in the pilot studies was the fact that 10-point Likert scales were used this time instead of 7-point Likert scales, due to the issues of skewness and kurtosis. Dawes (2008) has shown that the use of 5-point, 7-point and 10-point Likert scales create no significant difference in statistical tests except for the fact that the overall mean of a data set obtained through a 10-point Likert scale is likely to be lower than that obtained using a 5-point or 7-point Likert scale. As a result, the use of a 10-point scale was preferred in order to ensure a stronger fit of the data against multivariate assumptions.

7.1.2 Sampling and data collection

Sampling and data collection procedures were conducted using the services of an unbiased market research company. First, characteristics of the potential users of mobile applications in both industries were identified through analysis of existing market research data as well as the input of four industry experts. Two of these experts specialized in the management of digital banking services in different major banks, whereas the other two worked at a mobile service delivery and management agency whose client base included three of the leading airline brands in Turkey. While some user characteristics were similar for app users in banking and airline industries, some characteristics differed. As a result, separate customer groups were targeted in the sampling processes of Study 1 and Study 2.

Stratified sampling (Iacobucci and Churchill, 2010) was utilized in both studies, with a random sample drawn independently from each stratum. Prior to drawing the random sample, the strata were identified as "app users vs. non-users" among the target population of mobile apps. In order to enable analysis of group differences, 2/3 of the sample consisted of app users and 1/3 consisted of non-users in both studies.

For both service industries, our industry experts defined the target population as Internet users who also owned smartphones, and were capable of downloading and using mobile applications without requiring the help of others. These criteria were included in the screening questions at the beginning of both questionnaires. It was identified that potential app users in both banking and airline industries generally live in large cities, therefore the top 5 largest cities in Turkey, namely Istanbul, Ankara, Izmir, Bursa and Adana were included in the sampling process of both Study 1 and

Study 2. Another mutual characteristic of potential app users in both service industries was gender, which was evenly distributed among males and females.

A major difference between the target populations of Study 1 and Study 2 was the fact that potential app users in the banking industry were defined as all customers of the bank that fit the specifications given in the previous paragraph, whereas the potential app users in the airline industry mainly consisted of white-collar professionals who frequently traveled for work related purposes. As a result, the data collection process of Study 2 (airlines) focused mainly on commercial and financial districts within these 5 cities with special emphasis on the vicinities of major headquarters, plazas and similar offices, and Business Class check-in counters at airports. The data collection process of Study 1, on the other hand, was executed in a variety of public locations such as shopping malls, parks and major pedestrian areas in addition to those in Study 2.

Data was collected in the form of face-to-face survey interviews, where the survey administrator read the questions to the participants, and marked the answers on the form. Data collection for Study 1 was conducted and completed first, during the dates of 30 January–8 February 2015. Data collection for Study 2 was conducted during 10–27 February 2015. The target sample size in both studies was set as a minimum of 500 completely filled surveys. This number was determined as a requirement to ensure reliable data analysis in the next stage of the study.

7.1.3 Sample characteristics in Study 1 and Study 2

This section describes the sample characteristics in Study 1 and Study 2. During the data collection stage of Study 1, a total of 506 completed questionnaires were

collected. The demographic characteristics of Study 1 participants can be found in

Table 2 below.

Table 2. Demographic Characteristics of Study 1 Participants

Gender		
	Frequency	Percent
Female	252	49,8
Male	254	50,2
Total	506	100,0
Age		
	Frequency	Percent
18-24	108	21,3
25-34	222	43,9
35-49	127	25,1
50 +	49	9,7
Total	506	100,0
City of residence		
	Frequency	Percent
Istanbul	252	49,8
Ankara	93	18,4
Izmir	71	14,0
Adana	40	7,9
Bursa	50	9,9
Total	506	100,0
Education level		
	Frequency	Percent
Elementary	23	4,5
Secondary	52	10,3
High school	273	54,0
College or university degree	137	27,1
Graduate degree	21	4,2
Total	506	100,0
Average personal monthly net income		
	Frequency	Percent
Less than 1000 TL	25	4,9
1000-1199 TL	70	13,8
1200-1799 TL	104	20,6
1800-2999 TL	111	21,9
3000-4999 TL	71	14,0
5000-7500 TL	15	3,0
More than 7500 TL	7	1,4
No answer	103	20,4
Total	506	100,0

Consistent with our target population, the sample consisted of an even distribution of males and females. The age distribution of the sample was consistent with recent market research reports (Monitise Türkiye, 2014; The Financial Brand, 2014) regarding mobile app users in the banking industry, with the majority falling into the 25-34 age group, while the remainder primarily distributed among the 35-49 and 18-24 age groups. The sample's distribution in terms of cities of residence was consistent with the population ratios of the five largest cities in Turkey. The education level and average monthly net income distribution of the sample reflects the characteristics of the population that falls into the target customer segment of mobile applications in the banking industry.

Aside from demographic information, we asked participants to specify the bank from which they used banking services most frequently. The full list of banks represented in Study 1 and the percentage of participants that stated each bank as their primary brand of preference is outlined in Table 3 below.

Table 3. Primary Bank of Study 1 Participants

	Frequency	Percent
Garanti Bankası	121	23,9
Türkiye İş Bankası	87	17,2
Ziraat Bankası	77	15,2
Yapı Kredi Bankası	60	11,9
Akbank	54	10,7
Finansbank	35	6,9
Vakıfbank	22	4,3
Denizbank	14	2,8
Halkbank	13	2,6
TEB	11	2,2
ING Bank	4	,8
HSBC	3	,6
KuveytTürk	2	,4
BankAsya	1	,2
AlbarakaTürk	1	,2
AktifBank	1	,2
Total	506	100,0

All major consumer banks were represented in our sample. Garanti Bankası was the most widely preferred bank of our participants with nearly 24% penetration, followed by Türkiye İş Bankası (17%) and Ziraat Bankası (15%). Only two other brands were over the 10% mark, and these were Yapı Kredi Bankası and Akbank.

The final question that was significant with regards to defining our sample characteristics was the frequency at which participants used the mobile banking application. As it can be seen from Table 4 below, approximately 1/3 of participants stated that they "very rarely or never" used mobile banking services. On the other hand, nearly half of participants who were app users could be considered "heavy users" with a usage frequency of twice a month or more often.

Table 4. Mobile Banking App Usage Frequency of Study 1 Participants

	Frequency	Percent
Very rarely or never	160	31,6
1-2 times a year	47	9,3
Once every few months	60	11,9
Once a month	97	19,2
Twice a month or more often	142	28,1
Total	506	100,0

The total number of participants in Study 2 was 512, with 77.5% consisting of app users and 22.5% of non-users. The demographic characteristics of Study 2 participants can be viewed in Table 5. Here, we see that the demographic characteristics of Study 2 participants were not drastically different than those in Study 1. On the other hand, a major difference between the samples of the two studies lied in the mobile app usage frequency of users. This difference is also the reason for the percentage of non-users to be kept lower in Study 2 than Study 1.

Table 5. Demographic Characteristics of Study 2 Participants

Gender		
	Frequency	Percent
Female	262	51,2
Male	250	48,8
Total	512	100,0

Age		
	Frequency	Percent
18-24	104	20,3
25-34	243	47,5
35-49	121	23,6
50 +	44	8,6
Total	512	100,0

City of residence		
	Frequency	Percent
Istanbul	255	49,8
Ankara	90	17,6
Izmir	77	15,0
Adana	40	7,8
Bursa	50	9,8
Total	512	100,0

Education level		
	Frequency	Percent
Elementary	25	4,9
Secondary	49	9,6
High school	256	50,0
College or university degree	168	32,8
Graduate degree	14	2,7
Total	512	100,0

Average monthly net income		
	Frequency	Percent
Less than 1000 TL	13	2,5
1000-1199 TL	61	11,9
1200-1799 TL	115	22,5
1800-2999 TL	135	26,4
3000-4999 TL	52	10,2
5000-7500 TL	15	2,9
More than 7500 TL	6	1,2
No answer	115	22,5
Total	512	100,0

As it can be seen in Table 6 below, among the participants who stated that they had used the app, there was a significant percentage of people who could not be considered highly active users. Contrary to the relatively heavy usage patterns of mobile banking app users, the majority of mobile airline app users utilize the app once a month to 3-4 times a year.

Table 6. Mobile Airline App Usage Frequency of Study 2 Participants

	Frequency	Percent
Very rarely or never	115	22,5
1-2 times a year	112	21,9
Once every few months	172	33,6
Once a month	82	16,0
Twice a month or more often	31	6,1
Total	512	100,0

This difference between usage frequency distributions shown in Tables 4 and 6 can be attributed to the difference between the service usage behaviors of customers in the two service industries. People tend to use banking services more frequently than they travel by plane. This difference will be important in the interpretation of our results, and will be assessed in Chapter 8.

As in Study 1, we asked participants of Study 2 to specify the airline that they primarily preferred in their travels. The distribution of answers can be viewed in Table 7.

Table 7. Preferred Airline of Study 2 Participants

	Frequency	Percent
Türk Hava Yolları (THY)	270	52,7
Pegasus	140	27,3
Atlasjet	30	5,9
AnadoluJet	22	4,3
Onur Air	21	4,1
Sun Express	29	5,7
Total	512	100,0

7.1.4 Data analysis method: Structural Equation Modeling

The preferred method for data analysis in both studies was Structural Equation

Modeling (SEM), as in our pilot studies. It was preferred due to its effectiveness in

enabling the analysis of complex models such as the one we have in our final

research model depicted in Figure 2. The complexity of our final model stems from

the fact that CBBE is a multi-dimensional construct, which is not possible to

operationalize as a composite of its dimensions or as a second-order construct. As a

result, the effect of each innovation attribute on CBBE should be assessed separately

on each individual dimension of CBBE. The fact that we have three moderators in

our model also adds to the complexity of the theoretical relationship, and increases

the necessity of SEM as the data analysis method.

While there is no consensus on the sample size requirement of SEM in

literature, Hair et al. (2010) suggest a sample size cutoff of 500 for models such as

ours, containing large numbers of observed and unobserved variables. It is generally

accepted that larger sample sizes and degrees of freedom result in a more powerful

SEM analysis (McQuitty, 2004). On the other hand, as discussed in the data analysis

section of Pilot Study 1 conducted on a very large sample of Markafoni customers,

an excessively large sample size tends to inflate CMIN, which in turn causes poor fit

of the measurement model. As a result, it is important to maintain a balance between

the number of variables in the measurement model and the sample size in our

research design. As a result, the sample size was chosen to be slightly over 500 in

both studies.

Data analysis through SEM is conducted using a measurement model and a

structural model (Anderson and Gerbing, 1988). The measurement model is

identified through confirmatory factor analysis (CFA), and shows the relationship

between the observed and latent variables. It enables the assessment of convergent and discriminant validity, which reveal construct validity. Once the measurement model is constructed and analyzed, the structural model is built to estimate the casual relationships among latent variables (Byrne, 2010).

7.2 Data analysis and results

7.2.1 Study 1: Attributes of mobile banking applications and their effect on CBBE of banks

In order to test the theoretical model depicted in Figure 2, a measurement model was set with 12 latent constructs, followed by a structural model to test the hypotheses. These steps have been described in detail within the following subsections.

7.2.1.1 Measurement model

The measurement model in Study 1 was analyzed using AMOS 19 statistical software. The solution produced by the maximum likelihood method showed 53 items loading strongly on their corresponding factors. The rest were eliminated either due to their factor loadings being lower than 0.50 (Hair et al., 2010) or the calculated Cronbach's reliability coefficient alpha being lower than 0.70 (Nunnally and Bernstein, 1994).

In assessing model goodness of fit, it is often recommended to use multiple fit indices to reduce the risk of incorrectly assessing the model by using a single fit index not entirely suitable for the specific approach of the present study (Hair et al., 2010; Kleine, 2005). The goodness-of-fit values in our measurement model can be viewed in Table 8 below.

Table 8. Measurement Model Fit Indices in Study 1

Measure	Value	Threshold (Hair et al. 2010)
CMIN/df	1.888	< 3
CFI	0.950	> .90
GFI	0.947	> .95
AGFI	0.789	> .80
NFI	0.899	> .90
TLI	0.941	> .90
SRMR	0.081	< .09
RMSEA	0.042	< .05
P CLOSE	0.981	> .05

Overall, the measurement model has strong goodness of fit measures, with only GFI, AGFI and NFI being slightly below the thresholds of exceptional fit suggested by Hair et al. (2010). Considering the complexity of our model, we can confidently state that the fit of the measurement model is acceptable.

The final set of items obtained at the end of the CFA is shown in Appendix I ($p < 0.001$ for all loadings). The construct reliability and validity measures as well as the factor correlations can be viewed in Appendix J. As it is visible in Appendices I and J, the standardized loadings of all items are well over 0.6, and Cronbach's reliability measure is above 0.7 for all factors. Convergent validity is sufficient with AVE > 0.5 for all factors except perceived voluntariness, which is borderline at 0.5. The discriminant validity measures are also satisfactory with MSV < ASV and ASV < AVE for all factors, as well as the square root of AVE being greater than inter-construct correlations in all instances. As a result, we can confirm the validity of the factors in our measurement model according to the suggested thresholds provided by Hair et al. (2010).

Prior to constructing the structural model, we tested for multivariate assumptions of linearity and multicollinearity, as well as for common method bias. In

order to ensure linearity, we did a curve estimation for all relationships in our model, and determined that all relationships were sufficiently linear.

Before testing for multicolliearity, we ensured that the correlations between all variables in our model were below 0.5, which is an indication that the possibility of multicollinearity is relatively low. With this in mind, multicollinearity was tested through linear regressions among the independent variables. According to Hair et al. (2010), a common threshold for multicolliearity is a detection-tolerance value of 0.10, which corresponds to a variance inflation factor VIF=10 or above. All VIF values were indeed far lower than 10 and even lower than the conservative VIF threshold of 4 as suggested by Hair et al. (2010).

Finally, we ran Harman's single factor test for common method variance, in order to see whether our model was affected by common method bias. We ran a factor analysis by forcing all items into a single factor, and found that the single factor accounted for 27% ($< 50\%$) of the total variance explained, indicating that no significant common method bias existed (Podsakoff et al., 2003).

7.2.1.2 Structural model

We constructed our structural model using the 12 latent variables and 53 observed variables identified in the CFA, as well as the products of each innovation attribute with standardized composites of perceived brand innovativeness, perceived voluntariness and perceived risk in order to test for interaction effects. Perceived innovation attributes and the three moderators were modeled as exogenous constructs, the product terms were modeled as exogenous observed variables, and the brand equity dimensions as the endogenous constructs. Age, income level, education

and service usage frequency were also included in the model as control variables. The results of the final model test in Study 1 can be found in Appendix K.

Our results show that there is a direct relationship between innovation attributes and CBBE, and this relationship may be different among attributes and brand equity dimensions. In Hypothesis 1, we had stated that perceived usefulness of a mobile banking application would have a direct positive effect on all dimensions of customer-based brand equity. This hypothesis was supported for all CBBE dimensions except brand awareness. A similar finding was attained for Hypothesis 2, which stated that perceived ease of use of a mobile banking app would have a direct positive effect on all CBBE dimensions of banks. Again, this was supported for all CBBE dimensions except brand awareness. Hypothesis 3, which stated that perceived trialability of a mobile banking application would have a positive effect on CBBE dimensions, was strongly supported for brand awareness and brand trust, weakly supported for brand relationships, and rejected for brand differentiation and perceived quality. Hypothesis 4, which was the final hypothesis defining the direct relationship between perceived attributes of innovation and CBBE dimensions, was supported for all CBBE dimensions except perceived quality.

When we look at Hypothesis 5, related to the moderating effect of perceived brand innovativeness on the relationship between innovation attributes and CBBE dimensions, we see that perceived innovativeness dampened the positive relationship between perceived usefulness and CBBE dimensions (H5a), whereas it strengthened the positive relationship between perceived visibility and CBBE (H5d). It was observed that perceived brand innovativeness had no effect on the effects of perceived ease of use and perceived trialability on any of the CBBE constructs. It is important to note that perceived brand innovativeness also had a strong positive

effect on all CBBE constructs. As a result, we can state that as perceived brand innovativeness of a bank increases, its customer-based brand equity also increases.

Results pertaining to Hypothesis 6 and its sub-hypotheses show that the perceived voluntariness of use of a mobile banking app strengthens the positive effect of perceived usefulness on brand differentiation, brand relationships and brand trust. Similarly, it strengthens the positive effect of perceived usefulness on brand relationships. All other hypotheses related to the moderating effect of perceived voluntariness on the innovation attributes – CBBE relationship were rejected. In addition to the testing of Hypothesis 6, we also analyzed the direct effect of perceived voluntariness on CBBE constructs. We found that the perceived voluntariness of use of a mobile banking application has a direct positive effect on brand differentiation and brand relationships, and no significant effect on other CBBE constructs.

Hypothesis 7, outlining the moderating effect of perceived risk on the innovation attributes – CBBE relationship, was supported for all innovation attributes except perceived visibility. While perceived risk dampened the positive effects of perceived usefulness and ease of use on all CBBE constructs except brand awareness, it strengthened the effect of trialability on all CBBE constructs. In addition, we observed a significant negative relationship between perceived risk and all CBBE constructs except brand awareness.

We had included age, income level, education level and service usage frequency as control variables to see if any group differences were present based on demographic characteristics or the frequency at which the participants used banking services. Contrary to pilot study findings, none of the control variables had any effect on CBBE dimenions. In addition, no significant group differences were observed

when we compared the structural model findings of any of the groups categorized according to control variables. Despite the fact that service usage frequency was not found to have any effect on the model, post-hoc tests were conducted to determine whether frequency of app use had an effect on CBBE dimensions.

7.2.2 Study 2: Attributes of mobile airline apps and their effect on CBBE of airlines

For model validation purposes, Study 1 was replicated in a different but comparable service industry. Study 2 focused on the effects of mobile application characteristics perceived by customers on the customer-based brand equity of airlines. The measurement model was set with 12 latent constructs, followed by a structural model to test the hypotheses. These steps have been described in detail within the following subsections.

7.2.2.1 Measurement model

Similar to Study 1, the measurement model in Study 2 was analyzed using AMOS 19 statistical software. The solution produced by the maximum likelihood method showed 50 items loading strongly on their corresponding factors. A total of 36 items were eliminated using the same systematic methodology as in Study 1. The goodness-of-fit values in our measurement model can be viewed in Table 9 below.

Table 9. Measurement Model Fit Indices in Study 2

Measure	Value	Threshold (Hair et al. 2010)
CMIN/df	2.008	< 3
CFI	0.955	$> .90$
GFI	0.880	$> .95$
AGFI	0.857	$> .80$
NFI	0.914	$> .90$
TLI	0.949	$> .90$
SRMR	0.079	$< .09$
RMSEA	0.045	$< .05$
P CLOSE	0.995	$> .05$

Overall, the measurement model has exceptional goodness of fit measures, with the exception that GFI is slightly below the threshold suggested by Hair et al. (2010).

The final set of items obtained at the end of the CFA is shown in Appendix L ($p < 0.001$ for all loadings). The construct reliability and validity measures as well as the factor correlations can be viewed in Appendix M. As it is visible in the relevant Appendices, the standardized loadings of all items are well over 0.6, and Cronbach's reliability measure is above 0.7 for all factors. Convergent validity is sufficient with AVE > 0.5 for all factors except brand relationships, which is slightly below the cutoff value at 0.458. The discriminant validity measures are satisfactory with MSV $<$ ASV and ASV $<$ AVE for all factors, as well as the square root of AVE being greater than inter-construct correlations in all instances.

As we did in Study 1, we tested for multivariate assumptions of linearity and multicollinearity, as well as for common method bias before setting up the structural model. In order to ensure linearity, we once again did a curve estimation for all relationships in our model, and determined that all relationships were sufficiently linear.

Before testing for multicolliearity, we ensured that the correlations between all variables in our model were below 0.5, indicating that the possibility of multicollinearity is relatively low. Similar to the procedure in Study 1, multicollinearity was tested through linear regressions among the independent variables. All VIF values were found to be lower than the conservative threshold value VIF=4, confirming that we had no multicollinearity issues in our measurement model.

Finally, we ran Harman's single factor test for common method variance, in order to see whether our model was affected by common method bias. We ran a factor analysis by forcing all items into a single factor, and found that the single factor accounted for 21% (< 50%) of the total variance explained, indicating that no significant common method bias existed (Podsakoff et al., 2003).

7.2.2.2 Structural model

We repeated the procedure in Study 2 and constructed our structural model using the 12 latent variables and 50 observed variables identified in the CFA, as well as the products of each innovation attribute with standardized composites of perceived brand innovativeness, perceived voluntariness and perceived risk in order to test for interaction effects. Age, income level, education and service usage frequency were once again included in the model as control variables. The results of the final model test in Study 2 can be found in Appendix N.

Our results confirm the direct relationship observed between innovation attributes and CBBE in Study 1, although there are slight differences between the observed relationships. We had stated that the perceived usefulness (Hypothesis 1) and ease of use (Hypothesis 2) of a mobile airline application would have a direct

positive effect on all dimensions of customer-based brand equity. As in Study 1, these hypotheses were supported for all CBBE dimensions except brand awareness. Hypothesis 3, which stated that perceived trialability of a mobile banking application would have a positive effect on CBBE dimensions, was supported for all CBBE constructs except perceived quality. Hypothesis 4, related to the effect of perceived visibility of the mobile airline app on CBBE, was supported for all CBBE constructs.

Contrary to our findings in Study 1, the results related to Hypothesis 5 in Study 2 showed that perceived brand innovativeness strengthens the positive relationship between perceived usefulness and all CBBE constructs (H5a). Similarly, the positive effect of perceived ease of use on all CBBE constructs except brand trust was strengthened by perceived brand innovativeness (H5b). This finding related to H5b in Study 2 is different than our observation in Study 1, where innovativeness did not moderate the relationship between perceived ease of use and CBBE. Similar to the finding in Study 1, perceived brand innovativeness strengthened the positive relationship between perceived visibility and all CBBE constructs (H5d), and had no effect on the relationship between trialabiltiy and CBBE (H5c). Complementing our observation in Study 1, we observed a direct and positive relationship between perceived brand innovativeness and all CBBE constructs.

Tests of Hypothesis 6 and its sub-hypotheses showed slightly different results than Study 1. We once again found that perceived voluntariness of use strengthened the positive effect of perceived usefulness on all CBBE constructs except brand awareness. It was also shown to have a moderating effect on the ease of use – CBBE relationship, where it strengthened the effect of ease of use on differentiation, brand relationships and brand trust. H6c was rejected, as it had been in Study 1. In addition to the testing of Hypothesis 6, we also analyzed the direct effect of perceived

voluntariness on CBBE constructs. We found that the perceived voluntariness of use of a mobile airline application has a direct positive effect on brand relationships and brand trust, and no significant effect on other CBBE dimensions in the airline industry.

The findings related to Hypothesis 7 were similar to those in Study 1. Perceived risk had a moderating effect on the relationship between perceived usefulness and CBBE dimensions (H7a), where it dampened the positive effect of usefulness on brand relationships and brand trust. While perceived risk strengthened the positive relationship between trialability and all CBBE constructs (H7c), it also had a weak dampening effect on the positive relationship between perceived ease of use and brand differentiation (H7b). As in Study 1, H7d was rejected, implying that perceived risk had no effect on the relationship between mobile app visibility and CBBE. Perceived risk was observed to have a significant negative effect on brand relationships and brand trust, whereas it had no direct on the other CBBE constructs.

As we did in Study 1, we also included age, income level, education level and service usage frequency as control variables in the structural model of Study 2 to see if any group differences were present based on demographic characteristics or the frequency at which the participants used airlines' services. Similar to findings in Study 1, none of the control variables had any effect on CBBE dimensions. Once again, no significant group differences were observed when we compared the structural model findings of any of the groups categorized according to control variables.

7.3 Post-hoc tests

Several post-hoc tests were conducted to further analyze the innovation–brand equity relationship in the context of mobile applications in banking and airline industries. First, we looked at how customer perceived value (CPV) of the services in our two studies was affected by the attributes of mobile apps, and whether this effect had similarities with the innovation attributes–brand equity relationship. The reason for this post-hoc test is the fact that CBBE is often defined as the strength a brand gains or loses based on the value perceptions in customers' minds (Aaker, 1991; Staudt et al., 2014). As a result, we would expect CPV to be highly correlated with CBBE and therefore be affected similarly by the same independent variables.

One limitation of our study is that it is not an experimental design, and therefore does not allow us to observe the actual causal effect of mobile app use on customer-based brand equity. To make up for this limitation, in our second post-hoc test we analyzed group differences created by different levels of app use frequency with respect to CBBE constructs through a series of t-tests. We looked at the effect of frequent vs. infrequent app use on participants' evaluations of each CBBE component.

Our final post-hoc test aimed to analyze group differences caused by high vs. low perceived brand innovativeness on CBBE constructs, as well as on perceived innovation attributes.

7.3.1 Customer-perceived value, innovation attributes and customer-based brand equity

CBBE is a set of assets and liabilities that add or subtract from a value provided by a product or service to a company or that company's customers (Aaker, 1996; Erdem and Swait, 1998; Staudt et al., 2014). Customer value, or customer-perceived value

(CPV), is defined as "the consumer's overall assessment of the utility of a product based on the perceptions of what is received and what is given" (Zeithaml, 1988, p. 14). Staudt et al. (2014) have empirically demonstrated that CBBE and CPV are highly interrelated, which also finds support in retail and service quality literature (Baldauf et al., 2003; Sweeney et al., 1999). Based on these conceptualizations and empirical evidence, we designed a post-hoc test to determine whether the same relationships held between innovation attributes and CPV as the ones we observed between innovation attributes and CBBE in Study 1 and Study 2. First, we developed scale items to measure CPV using scales developed by Sweeney and Soutar (2001) and McDougal and Levesque (2000). These items were included in Study 1 and Study 2 surveys for data collection, and CFA was utilized for item elimination and scale refinement. The resulting CPV scale we obtained had three items and the validity measures shown in Table 10 and Table 11 below.

Table 10. Customer-Perceived Value (CPV) Scale Items

Item code	Original scale item	Standardized loading ($p < 0.001$)
CPV2	Compared to alternative companies, the company charges me fairly for similar services.	.694
CPV3	The company offers good value for its services.	.813
CPV4	Comparing what I pay to what I might get from other competitive companies, I think the company provides me with good value.	.861

Table 11. CPV Scale Reliability and Validity Measures in Study 1 and Study 2

	CR	AVE	MSV	ASV
CPV in Study 1	0.834	0.628	0.177	0.095
CPV in Study 2	0.881	0.711	0.177	0.089

Here, it is important to note once again that CPV stands for the customer perceived value of the overall service (not the value of the mobile app only). The relationships between perceived innovation attributes and CPV can be seen in Table 12. All

estimates are standardized estimates, and p values are denoted the same way as in Appendix K.

Table 12. Effect of Innovation Attributes and Moderators on CPV in Study 1 and Study 2

			Study 1		Study 2	
			Estimate	P	Estimate	P
AW	<---	CPV	.525	***	.219	***
DIF	<---	CPV	.442	***	.682	***
QUAL	<---	CPV	.449	***	.310	***
RE	<---	CPV	.465	***	.531	***
TR	<---	CPV	.460	***	.190	***
CPV	<---	PU	.385	***	.691	***
CPV	<---	EOU	.140	**	.583	***
CPV	<---	TRY	.003	.904	.217	***
CPV	<---	VIS	.570	***	.273	***

As expected, CPV of the service was found to be strongly related to all CBBE constructs in both studies. The findings related to the effect of perceived innovation attributes on CPV were also similar to that observed between innovation attributes and CBBE, although they were not identical. While CPV was strongly affected by perceived usefulness, ease of use and visibility in Study 1, it was not affected by perceived trialability. While at first glance we expect CPV to be directly and positively affected by all innovation attributes as in the support we had observed for Hypothesis 3, perceived trialability was also found to have no effect on brand differentiation and perceived quality. The fact that no direct effect of trialability was observed on CPV can be attributed to it lacking an effect on brand differentiation and perceived quality. In Study 2, on the other hand, the direct effect of each perceived innovation attribute was observed on a higher number of CBBE constructs, which is in line with the strong positive relationship observed between innovation attributes and CPV in Study 2.

We also looked at how moderator variables perceived brand innovativeness, voluntariness and risk affected the relationship between innovation attributes and CPV. The results are shown in Table 13 below.

Table 13. Effect of Moderators on Innovation Attributes–CPV Relationship

			Study 1		Study 2	
			Estimate	P	Estimate	P
CPV	<---	PU_X_INN	.101	**	.098	*
CPV	<---	EOU_X_INN	.096	*	.108	**
CPV	<---	TRY_X_INN	.091	*	.093	*
CPV	<---	VIS_X_INN	.124	**	.109	**
CPV	<---	PU_X_VOL	.205	***	.198	***
CPV	<---	EOU_X_VOL	.143	***	.205	***
CPV	<---	TRY_X_VOL	.127	***	.110	**
CPV	<---	VIS_X_VOL	.185	***	.109	**
CPV	<---	PU_X_RISK	-.088	**	-.081	**
CPV	<---	EOU_X_RISK	-.095	**	-.107	**
CPV	<---	TRY_X_RISK	.328	***	.138	***
CPV	<---	VIS_X_RISK	.113	***	.089	**

As it can be observed in the table above, while our moderating variables indeed affect the relationship between innovation attributes and CPV of the service in both studies, these moderation effects are slightly different than those observed with CBBE. While perceived brand innovativeness dampened the effect of perceived usefulness on CBBE in Study 1, its effect was strengthened its on CPV of the service in both studies, similar to the finding related to CBBE in Study 2. While the effect of perceived ease of use on CBBE was rejected in Study 1, its effect on CPV was again similar to the CBBE related findings in Study 2 in that perceived brand innovativeness strengthened the positive relationship between perceived ease of use and CPV of the service. While the effect of trialability on CBBE was found to be unaffected by perceived brand innovativeness, the relationship between trialability and CPV was strengthened by it in both studies.

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The findings related to the moderating effect of perceived voluntariness on the innovation attributes–CPV relationship were stronger in comparison to those related to CBBE in both studies. Perceived voluntariness of use strengthened the positive effect of all innovation attributes on customer perceived value of the service. On the other hand, the findings related to the moderating effect of perceived risk were similar to the innovation attributes–CBBE relationship. Consequently, perceived risk dampened the positive effect of perceived usefulness and ease of use on CPV, while it strengthened the positive effect of perceived trialability and visibility on CPV.

7.3.2 Effect of usage frequency on customer-based brand equity, customer perceived value and perceived brand innovativeness

Our second post-hoc test focused on whether usage of the mobile app had an effect on the overall brand equity perception of app users, who use the mobile application regularly. Despite the fact that we were not able to demonstrate this through an experimental study, we were able to collect data from non-users of the app as well as users who had various usage frequencies. In both studies, we classified our sample into "regular app users" defined as those who use the app once a month or more frequently, and "occasional and non-users" defined as those who use the app less frequently than once a month or never. We identified whether the people who were regular users of the app also had higher perceptions of brand equity by conducting an independent samples t-test on our data. The results of the t-test in Study 1 can be found in Table 14, which shows group differences between customers who regularly use the mobile banking app and those who do not use the app regularly, with respect to CBBE, CPV and perceived brand innovativeness.

Table 14. Independent Samples T-Test Results of the Difference between Regular App Users and Occasional/Non-Users in Study 1

	F	t	df	Sig	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
CPV	42.22	7.45	365.17	.00	1.05	.14	.77	1.33
Trust	7.54	3.04	437.08	.01	.38	.13	.14	.63
Brand Relationships	7.91	2.91	441.19	.01	.35	.12	.11	.58
Quality	7.78	3.53	447.13	.01	.38	.11	.17	.59
Differentiation	5.85	2.39	455.69	.02	.28	.12	.05	.51
Awareness	8.16	4.01	437.77	.00	.43	.11	.22	.64
Innovativeness	6.04	3.12	444.12	.01	.32	.10	.12	.53

As it can be seen from Table 14 above, there is a significant difference between participants' evaluation of CBBE constructs based on whether they are regular users of the mobile banking app or not. We can see that all CBBE constructs as well as customer perceived value and perceived brand innovativeness are higher for people who use the app once a month or more frequently than those who use it less frequently or not at all. When the same t-test was administered to the data in Study 2, it was observed that the results were rather different in the airline industry. As it can be observed in Table 15 below, frequent use of the mobile app did result in a higher CPV on average, whereas CBBE constructs and perceived brand innovativeness scores were not significantly different between groups.

Table 15. Independent Samples T-Test Results of the Difference between Regular App Users and Occasional/Non-Users in Study 2

	t	df	Sig.	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
CPV	3.59	399.79	.00	.59	.16	.27	.91
Trust	-.10	510.00	.92	-.01	.11	-.22	.20
Brand Relationships	.45	510.00	.65	.05	.10	-.16	.25
Quality	.24	461.86	.81	.03	.12	-.21	.27
Differentiation	.22	510.00	.83	.02	.11	-.19	.24
Awareness	.92	456.92	.36	.10	.11	-.11	.32
Innovativeness	.47	510	.64	.05	.12	-.16	.27

7.3.3 Effects of high vs. low perceived brand innovativeness

The final post-hoc test we conducted was related to possible group differences created by the level of perceived brand innovativeness felt by participants. We first classified our samples in both studies into "high perceived brand innovativeness" and "mid- to low perceived brand innovativeness" groups. We define the high perceived brand innovativeness group as the participants whose composite perceived brand innovativeness score for their bank or airline brand was 7 or above out of the scale of 10. The results are summarized in Table 16 for Study 1, and Table 17 for Study 2.

As demonstrated in Tables 16 and 17, the mean scores of all CBBE constructs, CPV and perceived innovation attributes are higher for the participants who also scored highly on the perceived brand innovativeness scale. In addition, the mean of perceived voluntariness is also significantly higher for this group, whereas the mean perceived risk score is significantly lower in both Study 1 and Study 2.

Table 16. Independent Samples T-Test Results Comparing High Perceived Brand Innovativeness versus Mid- to Low Perceived Brand Innovativeness Groups in Study 1

	t	df	Sig	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Risk	-6.38	310.3	.000	-1.20	.18	-1.57	-.83
Voluntariness	3.24	504	.001	.37	.11	.14	.60
CPV	5.56	297.9	.000	.85	.15	.55	1.15
Trust	23.49	500.0	.000	1.90	.08	1.74	2.06
Brand relationships	23.28	500.7	.000	1.79	.07	1.64	1.94
Quality	18.63	492.6	.000	1.45	.07	1.30	1.61
Differentiation	22.13	499.0	.000	1.73	.07	1.57	1.88
Awareness	19.65	501.2	.000	1.50	.07	1.35	1.65
Visibility	7.44	504	.000	1.15	.15	.85	1.46
Trialability	7.51	504	.000	1.33	.17	.98	1.68
Ease of Use	6.26	504	.000	1.04	.16	.71	1.36
Usefulness	6.86	504	.000	1.08	.15	.77	1.40

Table 17. Independent Samples T-Test Results Comparing High Perceived Brand Innovativeness versus Mid- to Low Perceived Brand Innovativeness Groups in Study 2

	t	df	Sig	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
CPV	4.1	510	.000	.91	.22	.47	1.34
Trust	10.9	87.5	.000	1.83	.16	1.49	2.16
Brand relationships	11.1	89.2	.000	1.70	.15	1.40	2.01
Quality	9.6	89.4	.000	1.77	.18	1.40	2.13
Differentiation	10.5	90.6	.000	1.68	.15	1.37	2.00
Awareness	9.1	85.0	.000	1.67	.18	1.30	2.03
Visibility	5.7	510	.000	1.47	.25	.97	1.98
Trialability	7.5	510	.000	1.82	.24	1.34	2.30
Ease of use	4.8	96.2	.000	1.22	.25	.71	1.72
Usefulness	6.3	510	.000	1.47	.23	1.01	1.92
Voluntariness	3.4	510	.001	.84	.24	.36	1.33
Risk	-2.9	117.7	.004	-.82	.28	-1.38	-.26

CHAPTER 8

DISCUSSION OF RESULTS

In this chapter, we discuss the findings of our final model test. Our results not only

support past studies that have suggested a direct relationship between perceived

attributes of innovations and customer-based brand equity, but they also provide a

holistic view of this relationship and show that perceived brand innovativeness,

perceived voluntariness of use and perceived risk should also be taken into careful

consideration prior to formulating a marketing strategy revolving around an

information technology innovation. We find that while most of our hypotheses were

supported, the effect of each independent variable and moderator in our model may

differ from one service industry to another, therefore it is important to assess the

industry-specific significance of each innovation attribute and moderator prior to

forming the relevant marketing communication strategy.

We begin this chapter by examining the effects of innovation attributes on the

CBBE of banks and airlines, in the context of mobile apps. We then discuss the role

of perceived brand innovativeness, perceived voluntariness of use and perceived risk

as moderators of these hypothesized relationships. Finally, we look at the results of

the post-hoc tests and discuss their implications for our final model.

8.1 Perceived attributes of information technology innovations and their effects on
customer-based service brand equity

We found that innovation attributes have a direct effect on dimensions of customer-

based service brand equity, and while this effect is significant in both banking and

airline industries, its strength and direction may vary by industry. Our results not

only support past studies such as Wang and Li (2012), who have analyzed the effects of innovation attributes on brand equity dimensions, but they also consolidate hypotheses suggested by different researchers (e.g. Chien, 2013; Wang and Li, 2012) in a holistic model that is generalizable to different service industries.

Before discussing the results of the hypothesized relationships, it is important to mention the scale development findings pertaining to innovation attributes and CBBE dimensions. In all of our studies, we confirmed that the attributes relevant to information technology innovations in service industries were perceived usefulness, perceived ease of use, trialability and visibility. In order to measure these attributes, we primarily used scale items that had already been developed and validated by Moore and Benbasat (1991), although we made minor adjustments to reflect the characteristics of smartphone applications. After the EFA and CFA stages of the pilot studies, we found that compatibility indeed merged with perceived usefulness. In addition, items measuring the result demonstrability dimension of the observability construct were found to be highly multicollinear with perceived usefulness. These findings were valid in both pilot studies, and the resulting scales were validated once again in Study 1 and Study 2 as described in Chapter 7.

Scale development to measure CBBE dimensions in multiple service industries can be considered a secondary contribution of this dissertation, since the generalizability of these scales has found support in both banking and airline industries. As stated by Taylor, Hunter and Lindberg (2007, p. 241), "a commensurable constitutive and operational definition of the brand equity construct in the general services marketing literature is not without controversy." As a result, it was important to develop and validate robust scales that were consistent over service brands in different industries so as to enable replication of our results by researchers

in future studies concerning CBBE in services. While the initial items in our survey instrument were mainly adapted from Yoo and Donthu (2000) and Kimpakorn and Tocquer (2010), the resulting scales are relatively simple to use and highly generalizable in the context of services. In the end of the scale development procedures, CBBE had five dimensions, namely brand awareness, brand differentiation, perceived quality, brand relationships and brand trust.

Hypothesis tests revealed that perceived usefulness has a positive effect on all CBBE dimensions except brand awareness in both studies. The fact that awareness was not affected by this innovation attribute could be due to the fact that customers may already be aware of the brand when assessing the usefulness of an innovation. This is also in support of Wang and Li's (2012) finding, where no relationship was observed between usability and brand awareness. While brand relationships was the CBBE dimension most strongly affected by perceived usefulness in Study 1 (banking), which is in line with the findings of Morgan-Thomas and Veloutsou (2013), brand differentiation was affected most strongly in Study 2 (airlines). As a result, it is important for marketers who will emphasize the usefulness of a mobile app in a marketing campaign to assess which CBBE dimension will be affected most by this attribute, and design their strategy and marketing message accordingly.

The effect of perceived ease of use differed more between the two industries in comparison to perceived usefulness. While it positively affected brand differentiation, brand relationships and brand trust in Study 1, it had no effect on brand awareness and perceived quality. The strongest effect was observed on brand relationships. On the other hand, perceived ease of use had a positive effect on all brand equity dimensions except brand awareness in Study 2, and the strongest effect was observed on brand differentiation. Again, we observe a difference between

industries in terms of how innovation attributes affect CBBE dimensions. As in the case of perceived usefulness, customers possibly assess the ease of use of the innovation while they are already aware of the brand, which explains the lack of a relationship between ease of use and brand awareness. The fact that perceived quality is not affected by ease of use in the case of banks could be attributed to the maturity of mobile apps in the banking industry, in comparison to the airline industry. Most banks have been utilizing mobile apps since the innovation became available, whereas its adoption by airlines and their customers is more recent. Most banks have achieved a noticeable level of ease of use in their apps, whereas the level of ease of use varies quite a bit from airline to airline. This is also visible in the mean and standard deviations of the data related to ease of use. The mean and standard deviation of ease of use in the banking survey were 7.12 and 1.56 respectively, whereas they were 7.02 and 2.74 respectively in the survey related to airlines. Although the means are comparable, the difference between the standard deviations shows the variation of perceived ease of use among participants. As a result, an easy to use mobile airline application could indeed result in customers perceiving the brand to be of higher quality, and could result in a significantly higher level of differentiation.

In Study 1, trialability was the innovation attribute that had the weakest overall effect on CBBE dimensions, with the strongest positive effect observed on brand awareness, followed by weaker effects on brand trust and brand relationships. It had no effect on brand differentiation or perceived quality. As a result, marketers in the banking industry should not emphasize trialability in their marketing communications, except when they aim to raise customers' awareness of the brand. The findings were again different in Study 2, where perceived trialability

significantly and positively affected brand awareness, brand differentiation, brand trust and weakly affected brand relationships. It had no effect on perceived quality. This finding also supports our proposition regarding the relative newness of mobile apps in the airline industry in comparison to the banking industry. By making the app available for customers to try (e.g. through a demo video, an interactive web based demo application, etc.) prior to making the decision to download and use it, airline brands would be able to strengthen multiple dimensions of their CBBE.

Once it was defined and operationalized accurately after the two pilot studies, perceived visibility of the mobile application had a strong positive effect on all brand equity dimensions except perceived quality in Study 1, and all brand equity dimensions in Study 2. This finding is different than the findings of our pilot studies due to the fact that we slightly changed the definition of perceived visibility and adapted scale items to fit the specific characteristics of mobile applications, which are highly personal information technology innovations with low usage visibility. Once we added the visibility of the mobile application in advertisements and service delivery channels of the brand into the definition of the construct, we were able to more reliably assess the effect of perceived visibility on CBBE dimensions. We find that it is important and beneficial for brands in both service industries within our focus to make the mobile application highly visible in their marketing communications and service delivery channels.

8.2 Moderators of the relationship between innovation attributes and customer-based brand equity

8.2.1 Perceived brand innovativeness

In this dissertation, we introduce a new construct called perceived brand innovativeness, which is defined as consumer' perception of the extent to which a brand introduces novel and creative ideas, services and solutions to the market. We had proposed that the perceived innovativeness of the brand would affect the relationships between perceived attributes of an information technology innovation and dimensions of CBBE. While both of our studies find support for this proposition, we observed that this moderation effect will be experienced differently in different service industries. In Study 1, we found that perceived brand innovativeness dampens the positive influence of perceived usefulness on all CBBE dimensions, except perceived quality. This implies that customers of a bank that is perceived as more innovative than its competitors would already expect their bank to introduce a highly useful mobile application. As a result, the application's usefulness makes a smaller contribution to the CBBE dimensions of an innovative brand, in comparison to its contribution to a brand with lower perceived innovativeness. Hence, in order to create the highest possible impact on their CBBE, innovative banks should emphasize attributes of information technology innovations other than usefulness in their marketing strategy. Judging from the moderation results concerning the other innovation attributes in Study 1, we can conclude that focusing on visibility would create the strongest positive impact on CBBE in the case of a bank that is perceived as highly innovative. In Study 2, on the other hand, we found that perceived brand innovativeness strengthens the positive effect of perceived usefulness on all CBBE

dimensions. Hence, we can state that innovative airlines would benefit from emphasizing the usefulness of their information technology innovations.

This finding implies that the moderating effect of perceived brand innovativeness may be experienced differently in different service industries. Therefore, marketers should not only evaluate the perceived innovativeness of their brand prior to formulating an innovation marketing strategy, but they should also assess the industry-specific effect of perceived brand innovativeness on consumers in their market. This is also supported by our findings related to perceived ease of use in our two studies. While the relationship between perceived ease of use and CBBE dimensions was not affected by perceived innovativeness in Study 1, findings of Study 2 were quite different. In the context of airlines, perceived brand innovativeness was found to strengthen the positive effect of perceived ease of use on all CBBE dimensions except brand trust. In order to fully understand the underlying reason behind this difference, we aim to conduct a detailed study of perceived brand innovativeness across different service industries in future research, as addressed in the final chapter of this dissertation.

Though our findings pertaining to perceived usefulness and ease of use were different in Study 1 and Study 2, our findings related to trialability and visibility were similar in both studies. Perceived brand innovativeness had no effect on the relationship between perceived trialability and CBBE, whereas it strengthened the effect of perceived visibility on all CBBE dimensions in both studies. This implies that service brands that are perceived to be innovative could benefit strongly from capitalizing on the visibility of an information technology innovation, and should invest in making the innovation more visible in their advertising and service delivery channels.

8.2.2 Perceived voluntariness of use

We had hypothesized that perceived voluntariness of use would moderate the effects of perceived usefulness, ease of use and trialability on CBBE dimensions of service brands. This hypothesis was supported for usefulness and ease of use, and rejected for trialability in both studies. Overall, our findings are in line with literature operationalizing voluntariness as a moderator between the behavioral intentions construct and its antecedents (e.g. Venkatesh et a., 2003). We have observed that the positive effects of both perceived usefulness and perceived ease of use are strengthened by voluntariness, and brand relationships is the CBBE dimension that is most strongly affected by this moderator. This implies that in order to create the strongest positive influence on brand relationships, service brands should avoid marketing strategies that may trigger a feeling of mandatory or forced use of the information technology innovation. Customers should feel as though they can stop using the mobile application whenever they want, yet should keep on using it because they find its attributes suitable for their needs.

8.2.3 Perceived risk

The findings related to perceived risk were noticeably different in two studies, possibly due to the financial risk associated with digital and mobile banking services in customers' minds. Perceived risk dampened the positive effects of perceived usefulness and ease of use on all CBBE dimensions in Study 1. This implies that if a customer associates a high level of risk with the mobile application, then the app's usefulness and ease of use have a lower influence on all aspects of the bank's customer-based brand equity. While the same hypotheses found support in Study 2 as well, the observed that the moderation effect was much weaker. Perceived risk was

found to weakly dampen the positive effect of perceived usefulness on brand

relationships and brand trust only, and this moderation effect was rather weak as it

can be observed in Appendix N. Similarly, the positive effect of perceived ease of

use on brand differentiation was weakly dampened by perceived risk, whereas none

of the other CBBE dimensions were affected. Judging by these results, we can

conclude that service brands should assess the level of risk an information

technology innovation holds in their customers' perception prior to formulating their

marketing strategy. If the perceived risk is relatively high, then they should first

assess the nature of this risk and aim to explain to customers the measures they have

taken to minimize it. On the other hand, if the perceived risk is relatively low or

irrelevant for customers as in the case of airlines, marketers can move forward with a

marketing strategy that capitalizes on innovation attributes to strengthen CBBE.

While the effect of perceived risk on usefulness and ease of use differed in

Study 1 and Study 2, it moderated the relationship between perceived trialability and

CBBE dimensions similarly in both studies. The positive effect of perceived

trialability on all CBBE dimensions was strengthened by perceived risk in both

banking and airline industries, meaning that as the perceived risk of a mobile

application increases in the eyes of customers, trialability becomes a stronger

predictor of CBBE enhancement. Hence, in cases where perceived risk of the mobile

app may be an issue (such as the case of banks), marketers will find it beneficial to

make trial versions, demo videos and interactive simulations of the application

available to customers so that they will be familiarized with the innovation.

The final moderation analysis on perceived risk was related to the

relationship between visibility of the innovation and dimensions of CBBE. In both

studies, perceived risk was found to have no effect on the relationship between perceived visibility and CBBE dimensions.

8.3 Discussion of post-hoc test findings and their implications

Our first post-hoc test aimed to verify our results by testing whether the same relationships between innovation attributes and CBBE dimensions were also valid for customer-perceived value (CPV). This was based on empirical evidence of past studies, which had demonstrated that CBBE and CPV are highly interrelated (Baldauf et al., 2003; Staudt et al., 2014; Sweeney et al., 1999). The direct effects of innovation attributes on CPV in both Study 1 and Study 2 were comparable to our results pertaining to CBBE in these studies. Similarly, all of the hypothesized moderators in our model had a similar effect on the relationship between innovation attributes and CPV in both studies, as they did in the case of innovation attributes and CBBE.

Our second post-hoc test analyzed the effect of app use on CBBE, CPV and perceived brand innovativeness. In Study 1, we found that frequent users of mobile apps have higher perceptions of all CBBE dimensions, as well as CPV and perceived brand innovativeness in comparison to non-users and infrequent users. As a result, we can conclude that regular use of information technology innovations improve all dimensions of customer-based brand equity of banks, as well as the customer-perceived value of their services. Regular interaction with the innovation also results in the customer perceiving the brand as more innovative. The reason for group differences to be insignificant for airlines could be the fact that the overall usage frequency of the airline application is quite low, populated around a few times a year or less. Users of the banking application, on the other hand, generally use the app at

least once a month if not more often. Such frequent interaction with the application is possibly what is causing all brand equity dimensions to be perceived as more positive in the eye of the customer, simply because he/she has a more fluent relationship with the brand in comparison to the customers using the airline application.

The final post-hoc test aimed to gain further insight on how perceived brand innovativeness affected model constructs. We found that customers who perceive the brand to be highly innovative also had higher perceptions of CBBE and CPV in both studies. In addition, these customers also score higher on perceived voluntariness, whereas they have lower risk perceptions. These findings also support our assertion that perceived brand innovativeness is an important construct in studies concerning innovation–brand interdependency, and requires more in-depth studies in future research.

CHAPTER 9

IMPLICATIONS AND CONCLUSION

9.1 Summary and conclusions

Information technology innovations have become a major strategic priority for service companies. In their marketing communications, many service companies feature information technology innovations as the primary value proposition, even when delivery of information technology is not among their actual core benefits. While practitioners often take for granted that information technology innovations will have a positive effect on the customer-based brand equity (CBBE) of service brands, this relationship has not been fully defined, analyzed or explained in literature. As a result, this dissertation aimed to answer the following questions: Do information technology innovations positively affect the CBBE of service brands? If so, which innovation attributes are the main predictors of CBBE enhancement? Which CBBE dimensions are most prominently affected by these attributes, and what other factors play a role in determining the nature and strength of this relationship? Consequently, our research objectives were to explore the relationship between information technology innovations, their attributes and the CBBE of service brands. We constructed, refined and validated a research model to provide an exhaustive and generalizable view of the innovation attributes-CBBE relationship in the context of services.

Few researchers had explored the topic prior to the current dissertation, and several gaps were identified in literature. Existing studies suggested direct effects of innovation attributes on CBBE, but their suggested empirical models and findings were drastically different from each other. Each used different innovation attributes,

different CBBE dimensions, and focused on different industries. In addition, their focus was on innovations that were indeed the core value proposition of the service provider. It was identified that a more generalizable model was needed, which focused on information technology innovations and service brands in various service industries, where the innovation is a (complementary) service delivery benefit rather than being the core benefit itself.

This study contributes to innovation research and theory in marketing as the first complete and generalizable model that defines the relationship between major common attributes of information technology innovations and dimensions of customer-based brand equity in service industries. Since there was little existing research on the topic, our aim was to understand this new and interesting phenomenon through an exploratory and descriptive approach (Iacobucci and Churchill, 2010), with a strong focus on theory building and validation. Consequently, we followed the discovery-oriented model development and testing methodology outlined by Menon et al. (1999). We constructed our final research model as a result of a rigorous exploratory phase followed by survey-based pilot studies. The research model included perceived usefulness, ease of use, trialability and visibility as independent variables; brand awareness, brand differentiation, perceived quality, brand relationships and brand trust as independent variables, and perceived brand innovativeness, voluntariness and perceived risk as moderators.

The model was tested through two studies based on customer surveys, which focused on the same innovation (mobile applications) in different industries, namely banks (Study 1) and airlines (Study2). The preferred data analysis method was structural equation modeling (SEM). In both studies, we found that perceived usefulness and ease of use had strong positive effects on all CBBE dimensions

except brand awareness. In Study 1, the brand relationships dimension of CBBE was most strongly affected by perceived usefulness and ease of use of the innovation, whereas the same constructs affected brand differentiation most prominently in Study 2. Perceived trialability had a weak overall effect on all CBBE dimensions in Study 1, implying that marketers in the banking industry may choose to omit trialability in their marketing communications when promoting mobile applications or similar information technology innovations. In Study 2, on the other hand, perceived trialability had a strong positive effect on brand awareness, trust and differentiation; and a weaker positive effect on brand relationships. This finding signifies the industry-specific differences that may be experienced in the innovation attributes–CBBE relationship, even when the same innovation is being examined across different service industries. Finally, brand differentiation was the CBBE dimension most strongly affected by the visibility of the innovation in both industries, in addition to brand relationships in Study 1 and brand awareness in Study 2.

We defined perceived brand innovativeness as consumers' perception of the extent to which a brand introduces novel and creative ideas, services and solutions to the market. On both studies, perceived brand innovativeness was found to have a significant positive effect on all CBBE dimensions, whereas the moderating effect of the construct was experienced differently in each study. Contrary to Study 2 findings in which perceived brand innovativeness strengthened the positive effect of mobile app usefulness on all CBBE dimensions of airlines, the results of Study 1 revealed a dampening effect of brand innovativeness on the relationship between usefulness and all CBBE dimensions (except perceived quality). This implies that customers of a bank that is seen as more innovative than its competitors already expect their bank to

introduce a highly useful mobile application. On the other hand, it was found that perceived brand innovativeness strengthens the effect of visibility on all CBBE dimensions in both studies. Hence, in order to create a strong effect on CBBE, an innovative bank should focus marketing communication efforts on the visibility of the innovation rather than other attributes. Overall, we have shown that perceived brand innovativeness is an important construct with significant effects on dimensions of customer-based service brand equity. The construct and its industry-specific effects require further analysis by researchers so as to enhance marketers' understanding of the concept and enable them to integrate it to their innovation marketing strategy.

We observed that perceived voluntariness was not a strong moderator in either study, which was a finding also in line with pilot study results. This implies that in the context of information technology innovations for which the adoption decision is primarily voluntary, the innovating brand does not need to emphasize voluntariness as a trait in its marketing strategy or communications. On the other hand, it became apparent that perceived risk could strongly affect the influence of innovation attributes in the banking industry, where customers associate the introduction of an information technology innovation as a threat to the security of their financial assets and/or the privacy of their personal information. While perceived risk also dampened the effects of perceived usefulness and ease of use in Study 2, this effect was much stronger in the case of banks in Study 1. Overall, enabling customers to try the features of the innovation that reduce risk would be a good strategy to overcome the dampening effect of this moderator. Service brands should assess the level of risk an information technology innovation holds in their customers' perception prior to building their innovation marketing strategy.

In this dissertation, we have presented a holistic and generalizable view of the relationship between innovation attributes and the CBBE of service brands in the context of information technology innovations. Our findings support that service companies should indeed make innovation a major strategic priority, and should promote it strongly in their marketing strategy in order to enhance the perceived value of their brands in the eyes of customers. However, our results show that the marketing message relating the innovation and the brand should be selected carefully in order to maximize the benefit gained from introducing and promoting the innovation.

9.2 Contribution to theory and implications for researchers

This study has important theoretical implications concerning innovation–brand interdependency in service industries, due to its focus on theory building and validation. Our theoretical model is the first complete and robust model that defines the relationship between all attributes of information technology innovations and dimensions of customer-based brand equity in service industries.

In this dissertation, we not only provided a holistic model defining the direct effects of perceived innovation attributes on the CBBE of service brands, but we also introduced a new moderating construct called perceived brand innovativeness, which we demonstrated to have a significant influence on how information technology innovations may contribute to different dimensions of CBBE in the context of services. While we acknowledge that it requires further development, this construct will complement all studies focusing on the marketing and brand-related implications of innovations.

Our final contribution is that the scales measuring all constructs in our model were developed and tested through four different survey-based quantitative studies, providing academics with strong measurement instruments to be used in future empirical studies. Studies to date focusing on how attributes of information technology innovations affect CBBE in the context of services have all used different innovation attributes and different brand equity dimensions in their operational models (e.g. Chien, 2013; Morgan-Thomas and Veloutsou, 2013; Wang and Li, 2012). We have shown that CBBE in services can indeed be operationalized as five main constructs, and the scale items we have used have been validated through large scale surveys in two different service industries.

9.3 Implications for practitioners

Our findings have major implications for practitioners, especially those specializing in service industries. First, we found that even though attributes of information technology innovations generally have a positive effect on customer-based brand equity of service brands, this positive effect may not always be strong, and depends on customer perceptions specific to the service industry as well as the moderating effects of three important constructs. The magnitude of each innovation attribute's effect on brand equity differs, therefore marketers should begin their strategy process by carefully assessing which innovation attributes are perceived as more important by their customers, and which moderating variables will play a stronger role in affecting the innovation – brand equity relationship. The perceived innovativeness of their brand should also be assessed since it may indeed have a dampening effect on some innovation attributes depending on the dynamics of the service industry they operate in, and overall expectations of customers.

9.4 Limitations and suggestions for future research

Despite its success in building and testing a holistic theoretical model to define the relationship between attributes of information technology innovations and service brand equity dimensions, this dissertation also has several limitations. First and foremost, the current study lacks a demonstration of causality, meaning that the actual change in CBBE dimensions as a result of the information technology innovation could not be demonstrated or observed through an experiment. While we addressed this limitation in our post-hoc tests by showing that frequent app users rated all CBBE dimensions higher than infrequent users or non-users, causality should be demonstrated in future studies through experiments both in controlled environments and in real life situations.

A theory should be able to explain and predict, yet it should also be simple and parsimonious to enable clarity in interpretation. The second limitation of this dissertation is the fact that our theoretical model is rather complex, and may be difficult to interpret or replicate. While we fully acknowledge the complexity of our model, our choice of a relatively complicated route was for the sake of providing a holistic view, in addition to the fact that it was not possible to reliably model CBBE as a second-order construct. Despite the vast number of existing studies on brand equity, a reliable and simple measure of CBBE or overall brand equity is yet to be developed. In order to develop a more parsimonious model explaining the relationship between innovation and CBBE, future research should continue focusing on developing reliable ways of measuring overall customer-based brand equity.

A final limitation of this study is that while we identified and introduced a new construct called perceived brand innovativeness, it was not possible to explore this construct in the level of depth that was indeed necessary to fully understand its

effects. Due to the fact that it was discovered at later stages of the dissertation, the effects of perceived brand innovativeness in different service industries and different brands could not be thoroughly analyzed, causing a sense of incompleteness in our explanations as to why its effects may have been experienced differently in two studies. We also believe that, despite its strong reliability and validity indicators, the measurement instrument we used to operationalize this construct requires further development in future research.

In light of our findings and the limitations of the current dissertation, future research should focus on building an experimental design so as to demonstrate the validity of the hypothesized relationships in real life settings, and test whether significant changes are observed on dimensions of CBBE. The study should also be replicated using a simpler, single dimension measure of CBBE, which requires further analyses and scale development studies in order to construct a more robust and parsimonious measurement instrument.

As the current dissertation focused solely on pure service industries with no product component, future research should address possible similarities or differences that may be observed on the theoretical model in other service industries such as e-commerce and/or retail. Such studies will help demonstrate the generalizability of our proposed model into other service industries with more complex service delivery structures involving a product component.

As stated previously, a final and important area for future research is the in-depth analysis of the perceived brand innovativeness construct. The construct should be defined, validated and operationalized in an in-depth and structured manner in order to allow for more reliable and robust analyses in future empirical studies. Since we focused solely on non-technology-intensive service industries in the present

study, future research should also analyze its effects in technology-intensive service industries such as information and communication technologies.

LIST OF SURVEY ITEMS BY CONSTRUCT IN PILOT STUDY 1
(E-COMMERCE)

<u>Perceived Innovation Attributes</u> (Moore and Benbasat, 1991; Van Slyke et al., 2007)

Perceived Usefulness

    PU1. Using MultiBasket improves my shopping experience on the Markafoni website.

    PU2. Overall, I find using MultiBasket to be advantageous when compared to forming a separate shopping basket for every campaign item purchased.

    PU3. Using MultiBasket enables me to save on my Markafoni purchases.

    PU4. Overall, using MultiBasket improves my shopping experience on the Markafoni website.

Compatibility

    COM1. Using MultiBasket is compatible with all aspects of how I am used to shopping online.

    COM2. MultiBasket fits well with the way I shop online.

Ease of Use

    EOU1. Overall, I believe that the MultiBasket feature is easy to use.

    EOU2. It was easy for me to understand the MultiBasket feature.

    EOU3. Learning to use the MultiBasket feature was easy for me.

Observability (Consisting of two dimensions: RD – Result demonstrability, and VIS – Visibility)

    RD1. I would have no difficulty telling others about the results of using the MultiBasket feature.

    RD2. I believe I could communicate to others the consequences of using MultiBasket.

    RD3. The results of using MultiBasket are apparent to me.

    VIS1. I have seen many people using the MultiBasket feature.

    VIS2. It is easy for me to observe others using the MultiBasket feature.

Voluntariness

    VOL1. My use of the MultiBasket feature is voluntary (as opposed to being required by the brand or other party).

    VOL2. If I wanted to, I could order separate campaign items in separate baskets.

<u>Customer-Based Brand Equity</u>

Brand awareness (Kimpakorn & Tocquer, 2010; Yoo & Donthu, 2000)

    AW1. When I think of brands in the online shopping industry, Markafoni is among the first that come to my mind.

AW2. When I think of brands in the private shopping industry, Markafoni is the first that comes to my mind.

AW3. I am aware of the services provided by Markafoni.

Brand associations (Wang & Li, 2012; Yoo & Donthu, 2000)

AS1. Markafoni has a distinct brand image.

AS2. I can quickly recall the symbol or logo of Markafoni.

AS3. I do not have difficulty in imagining Markafoni in my mind.

AS4. I have a good idea of the type of person that would use the services of the Markafoni brand.

AS5. All websites that are owned and operated by the Markafoni brand reflect Markafoni's brand image

Brand differentiation (Kimpakorn & Tocquer, 2010)

DIF1. Markafoni really stands out from other brands in the private shopping industry

DIF2. There are certain characteristics of Markafoni that differentiate it from others in the market.

Perceived quality (Wang & Li, 2012)

QL1. The services of Markafoni have consistent quality.

QL2. In comparison to alternative brands, the likely quality of Markafoni brand is extremely high.

QL3. The likely quality of Markafoni services is extremely high.

Brand relationships (Kimpakorn & Tocquer, 2010)

RE1. I really love Markafoni.

RE2. I will not use the services of other brands when Markafoni is available.

RE3. I feel like I almost belong to a club with other customers of this brand.

RE4. I like to talk about Markafoni to others.

RE5. I would be interested in merchandise with the Markafoni name or logo on it.

RE6. I like to follow news about this brand closely.

RE7. I consider myself to be loyal to Markafoni

Brand trust (Kimpakorn & Tocquer, 2010)

TRUST1. I almost never had a bad experience with Markafoni.

TRUST2. I feel confidence in this brand.

TRUST3. Markafoni has a good reputation.

TRUST4. Markafoni is honest.

TRUST5. I know that if I have a problem as a customer of this brand, they would do their best to help me.

OPERATIONAL MEASURES AND SCALE RELIABILITY VALUES IN
PILOT STUDY 1[a]

Item		Standardized Loading[c]
Usefulness (CR= .93, AVE= .69)[b]		
PU1	Using MultiBasket improves my shopping experience on the Markafoni website.	.86
PU2	Overall, I find using MultiBasket to be advantageous when compared to forming a separate shopping basket for every campaign item purchased.	.84
PU3	Using MultiBasket enables me to save on my Markafoni purchases.	.85
PU4	Overall, using MultiBasket improves my shopping experience on the Markafoni website.	.81
COM1	Using MultiBasket is compatible with all aspects of how I am used to shopping online.	.75
COM2	I think that MultiBasket fits well with the way I shop online.	.87
Ease of use (CR= .93, AVE= .82)		
EOU1	Overall, I believe that the MultiBasket feature is easy to use.	.90
EOU2	It was easy for me to understand the MultiBasket feature.	.90
EOU3	Learning to use the MultiBasket feature was easy for me.	.92
Result demonstrability (CR= .92, AVE= .86)		
RD1	I would have no difficulty telling others about the results of using the MultiBasket feature.	.94
RD2	I believe I could communicate to others the consequences of using MultiBasket.	.91
Visibility (CR= .92, AVE= .85)		
VIS1	I have seen many people using the MultiBasket feature.	.94
VIS2	It is easy for me to observe others using the MultiBasket feature.	.91
Voluntariness (CR= .80, AVE= .67)		
VOL1	My use of the MultiBasket feature is voluntary (as opposed to being required by the brand or other party).	.87
VOL2	If I wanted to, I could order separate campaign items in separate baskets.	.77
Trust (CR= .93, AVE= .71)		
TRUST1	I almost never had a bad experience with Markafoni.	.69
TRUST2	I feel confidence in this brand.	.92
TRUST3	Markafoni has a good reputation.	.94
TRUST4	Markafoni is honest.	.90
TRUST5	I know that if I have a problem as a customer of this brand, they would do their best to help me.	.76
Brand awareness with brand associations (CR= .81, AVE= .50)		

AS1	Markafoni has a distinct brand image.	.72
AS3	I do not have difficulty in imagining Markafoni in my mind.	.62
AW1	When I think of brands in the online shopping industry, Markafoni is among the first that come to my mind.	.69
AW2	When I think of brands in the private shopping industry, Markafoni is the first that comes to my mind.	.72
AW3	I am aware of the services provided by Markafoni.	.65

Differentiation (CR= .90, AVE= .65)

DIF1	Markafoni really stands out from other brands in the private shopping industry	.74
DIF2	There are certain characteristics of Markafoni that differentiate it from others in the market.	.78
QL1	The services of Markafoni have consistent quality.	.87
QL2	In comparison to alternative brands, the likely quality of Markafoni brand is extremely high.	.83
RE2	I will not use the services of other brands when Markafoni is available.	.79

Brand relationships (CR= , V.E.=)

RE4	I like to talk about Markafoni to others.	.79
RE5	I would be interested in merchandise with the Markafoni name or logo on it.	.51
RE6	I like to follow news about this brand closely.	.72
RE7	I consider myself to be loyal to Markafoni	.78

a. Goodness-of-fit statistics of the measurement model are as follows: χ^2=5611.011, df=720, CMIN/df =7.79, Root Mean Square Error of Approximation (RMSEA) = .046, Goodness-of-Fit Index (GFI) = .92, Adjusted Goodness-of-Fit Index (AGFI) = .90, Normed Fit Index (NFI) = .95, Comparative Fit Index (CFI) = .96, Incremental Fit Index (IFI) = .96, Tucker-Lewis Index (TLI)=.95.

b. Scale composite reliability and variance extracted.

c. $p < 0.001$ for all loadings.

STRUCTURAL MODEL ESTIMATES IN PILOT STUDY 1[a]

Hypothesized Relationship				Estimate[b]	Conclusion
Relationships of innovation attributes to brand equity dimensions					
H1a, H1b	Usefulness[c]	→	Awareness[d]	.71***	Supported
H1c	Usefulness	→	Differentiation	.60***	Supported
H1e	Usefulness	→	Relationships	.54***	Supported
H1f	Usefulness	→	Trust	.65***	Supported
H2a, H2b	Ease of use	→	Awareness	.66***	Supported
H2c	Ease of use	→	Differentiation	.77***	Supported
H2e	Ease of use	→	Relationships	.59***	Supported
H2f	Ease of use	→	Trust	.67***	Supported
H5a, H5b	Visibility[e]	→	Awareness	-.04	Rejected
H5c	Visibility	→	Differentiation	-.02	Rejected
H5e	Visibility	→	Relationships	.11	Rejected
H5f	Visibility	→	Trust	-.04	Rejected
Relationship of voluntariness to brand equity dimensions					
	Voluntariness	→	Awareness	.01	
	Voluntariness	→	Differentiation	-.02	
	Voluntariness	→	Relationships	.01	
	Voluntariness	→	Trust	.02	
Interactions					
	PU_X_VOL[f]	→	Awareness	-.21	Rejected
H6a	PU_X_VOL	→	Differentiation	.18	Rejected
	PU_X_VOL	→	Relationships	-.02	Rejected
	PU_X_VOL	→	Trust	-.25	Rejected
	EOU_X_VOL	→	Awareness	.18	Rejected
H6b	EOU_X_VOL	→	Differentiation	-.61	Rejected
	EOU_X_VOL	→	Relationships	-.16	Rejected
	EOU_X_VOL	→	Trust	.17	Rejected
	VIS_X_VOL	→	Awareness	.02	Rejected
H6e	VIS_X_VOL	→	Differentiation	.03	Rejected
	VIS_X_VOL	→	Relationships	.02	Rejected
	VIS_X_VOL	→	Trust	.02	Rejected
Controls on brand equity dimensions					
	Age	→	Awareness	.01	
	Age	→	Differentiation	.09***	
	Age	→	Relationships	.06*	
	Age	→	Trust	.08***	
	Education	→	Awareness	.05*	

Education	→	Differentiation	-.06***
Education	→	Relationships	-.13***
Education	→	Trust	-.05*
Income[g]	→	Awareness	.07***
Income	→	Differentiation	.04*
Income	→	Relationships	-.05*
Income	→	Trust	.04*
ShoppingFreq[h]	→	Awareness	.10***
ShoppingFreq	→	Differentiation	.10***
ShoppingFreq	→	Relationships	.27***
ShoppingFreq	→	Trust	.03*

*** $p < 0.001$

* $p < 0.05$

a. Goodness-of-fit statistics of the measurement model are as follows: CMIN/df =7.92, Root Mean Square Error of Approximation (RMSEA) = .048, Goodness-of-Fit Index (GFI) = .92, Adjusted Goodness-of-Fit Index (AGFI) = .90, Normed Fit Index (NFI) = .95, Comparative Fit Index (CFI) = .96, Incremental Fit Index (IFI) = .96, Tucker-Lewis Index (TLI)=.95.

b. Standardized estimates.

c. The construct Usefulness also includes items measuring compatibility, which is why Hypotheses H3a-f were not included.

d. Brand awareness and brand associations items merged together in EFA and CFA, causing Hypotheses a and b to be combined for hypotheses concerning all innovation attributes.

e. Observability had to be modeled as two constructs, Result Demonstrability and Visibility. Result Demonstrability was eliminated due to multicollinearity issues, therefore H5a-f were tested for Visibility only.

f. Interaction terms: PU_X_VOL= Usefulness X Voluntariness; EOU_X_VOL=Ease of use X Voluntariness; VIS_X_VOL= Visibility X Voluntariness.

g. Personal monthly net income

h. Frequency at which the respondent shops from Markafoni.

LIST OF SURVEY ITEMS BY CONSTRUCT IN PILOT STUDY 2
(BANKING)

<u>Perceived Innovation Attributes</u>

Perceived Usefulness

PU1. My bank's mobile banking application for smartphones improves my performance when using banking services.

PU2. Overall, I find using the mobile banking app advantageous when using banking services.

PU3. My bank's mobile banking app enables me to perform banking tasks more quickly.

PU4. Overall, using the mobile banking app for smartphones improves the service experience my bank provides me.

Compatibility

COM1. The mobile banking app is compatible with the banking services I frequently use.

COM2. Using the mobile banking app is compatible with my lifestyle.

Ease of Use

EOU1. Overall, I believe that my bank's mobile banking application is easy to use.

EOU2. I can easily use all necessary banking services on my bank's mobile banking application.

EOU3. Learning to use the mobile banking app was easy for me.

Trialability

TRY1. Before deciding whether to use my bank's mobile banking application, I was able to properly try it out.

TRY2. I know where to go to download and try out various uses of the mobile banking application.

Observability (Consisting of two dimensions: RD – Result demonstrability, and VIS – Visibility)

RD1. I would have no difficulty telling others about the results of using the mobile banking application for smartphones.

RD2. I believe I could communicate to others the consequences of using the mobile banking application.

RD3. The results of using the mobile banking app are apparent to me.

VIS1. I have seen many people using the mobile banking application for smartphones.

VIS2. It is easy for me to observe others using a mobile banking application.

Voluntariness

VOL1. Using the mobile banking app is not compulsory.

VOL2. My use of the mobile banking application is voluntary (as opposed to being required by the brand or other party).

VOL3. I can easily stop using my bank's mobile banking application if I want to.

Customer-Based Brand Equity

Brand awareness

AW1. When I think of brands in the Turkish banking industry, this brand is among the first that come to my mind.

AW2. This brand is the first bank that comes to my mind.

AW3. I am aware of the services provided by this brand.

Brand associations

AS1. This bank has a distinct brand image.

AS2. I can quickly recall the symbol or logo of this bank.

AS3. I do not have difficulty in imagining this banking brand in my mind.

AS4. I have a good idea of the type of person that would use the services of this bank.

AS5. All service locations of this bank brand reflect its brand image.

Brand differentiation

DIF1. This bank really stands out from other brands in the Turkish banking industry.

DIF2. There are certain characteristics of this bank that differentiate it from others in the market.

Perceived quality

QL1. The services of this bank have consistent quality

QL2. In comparison to alternative brands, the likely quality of this bank is extremely high

QL3. It is easy to use the services of this bank

Brand relationships

RE1. I really love this brand.

RE2. I will not use the services of other brands when this brand is available.

RE3. I feel like I almost belong to a club with other customers of this brand.

RE4. I like to talk about this brand to others.

RE5. I would be interested in merchandise with this brand's name on it.

RE6. I like to follow news about this brand closely.

RE7. I consider myself to be loyal to this bank.

Brand trust

TRUST1. I almost never had a bad experience with this brand.

TRUST2. I feel confidence in this brand.

TRUST3. This brand has a good reputation.

TRUST4. This brand is honest.

TRUST5. I know that if I have a problem as a customer of this brand, they would do their best to help me.

OPERATIONAL MEASURES AND SCALE RELIABILITY VALUES IN
PILOT STUDY 2[a]

Item		Standardized Loading[c]
Perceived Usefulness (CR= .96, AVE= .79)[b]		
PU1	My bank's mobile banking application for smartphones improves my performance when using banking services.	.94
PU2	Overall, I find using the mobile banking app advantageous when using banking services.	.94
PU3	My bank's mobile banking app enables me to perform banking tasks more quickly.	.92
PU4	Overall, using the mobile banking app for smartphones improves the service experience my bank provides me.	.95
COM1	The mobile banking app is compatible with the banking services I frequently use.	.79
COM2	Using the mobile banking app is compatible with my lifestyle.	.79
Ease of Use (CR= .96, AVE= .89)		
EOU1	Overall, I believe that my bank's mobile banking application is easy to use.	.96
EOU2	I can easily use all necessary banking services on my bank's mobile banking application.	.93
EOU3	Learning to use the mobile banking app was easy for me.	.94
Trialability (CR= .87, AVE= .78)		
TRY1	Before deciding whether to use my bank's mobile banking application, I was able to properly try it out.	.96
TRY2	I know where to go to download and try out various uses of the mobile banking application.	.80
Result demonstrability (CR= .98, AVE= .97)		
RD1	I would have no difficulty telling others about the results of using the mobile banking application for smartphones.	.98
RD2	I believe I could communicate to others the consequences of using the mobile banking application.	.99
Visibility (CR= .89, AVE=.80)		
VIS1	I have seen many people using the mobile banking application for smartphones.	.96
VIS2	It is easy for me to observe others using a mobile banking application.	.82
Voluntariness (CR= .89, AVE= .80)		
VOL1	Using the mobile banking app is not compulsory.	.93

	My use of the mobile banking application is voluntary (as	
VOL2	opposed to being required by the brand or other party).	.72
VOL3	I can easily stop using my bank's mobile banking application if I want to.	.89

Brand awareness (CR= .86, AVE= .55)

	When I think of brands in the Turkish banking industry, this	
AW1	brand is among the first that come to my mind.	.72
AW3	I am aware of the services provided by this brand.	.69
AS1	This bank has a distinct brand image.	.86
AS2	I can quickly recall the symbol or logo of this bank.	.68
AS3	I do not have difficulty in imagining this banking brand in my mind.	.76

Brand differentiation (CR= .90, AVE= .68)

	This bank really stands out from other brands in the Turkish	
DIF1	banking industry.	.85
DIF2	There are certain characteristics of this bank that differentiate it from others in the market.	.82
QL2	In comparison to alternative brands, the likely quality of this bank is extremely high.	.81
RE2	I will not use the services of other brands when this brand is available.	.82

Brand relationships (CR= .88, AVE=.52)

RE4	I like to talk about this brand to others.	.78
RE5	I would be interested in merchandise with this brand's name on it.	.66
RE6	I like to follow news about this brand closely.	.83
RE7	I consider myself to be loyal to this bank.	.82

Brand trust (CR= .96, AVE=.69)

TRUST1	I almost never had a bad experience with this brand.	.72
TRUST2	I feel confidence in this brand.	.90
TRUST3	This brand has a good reputation.	.89
TRUST4	This brand is honest.	.85
TRUST5	I know that if I have a problem as a customer of this brand, they would do their best to help me.	.75

a. Goodness-of-fit statistics of the measurement model are as follows: χ^2=2121.314, df=542, CMIN/df =3.91, Root Mean Square Error of Approximation (RMSEA) = .096, Goodness-of-Fit Index (GFI) = .75, Adjusted Goodness-of-Fit Index (AGFI) = .70, Normed Fit Index (NFI) = .84, Comparative Fit Index (CFI) = .87, Incremental Fit Index (IFI) = .87, Tucker-Lewis Index (TLI)=.85.
b. Scale composite reliability and variance extracted.
c. $p < 0.001$ for all loadings.

STRUCTURAL MODEL ESTIMATES IN PILOT STUDY 2[a]

Hypothesized Relationship				Estimate[b]	Conclusion
Relationships of innovation attributes to brand equity dimensions					
H1a, H1b	Usefulness[c]	→	Awareness[d]	.34**	Supported
H1c	Usefulness	→	Differentiation	.21*	Supported
H1e	Usefulness	→	Relationships	.10	Rejected
H1f	Usefulness	→	Trust	.41*	Supported
H2a, H2b	Ease of use	→	Awareness	.37*	Supported
H2c	Ease of use	→	Differentiation	.37*	Supported
H2e	Ease of use	→	Relationships	.35*	Supported
H2f	Ease of use	→	Trust	.24**	Supported
H4a, H4b	Trialability	→	Awareness	-.13	Rejected
H4c	Trialability	→	Differentiation	.08	Rejected
H4e	Trialability	→	Relationships	.08	Rejected
H4f	Trialability	→	Trust	.06	Rejected
H5a, H5b	Visibility[e]	→	Awareness	.004	Rejected
H5c	Visibility	→	Differentiation	.15*	Supported
H5e	Visibility	→	Relationships	.28***	Supported
H5f	Visibility	→	Trust	.04	Rejected
Relationship of voluntariness to brand equity dimensions					
	Voluntariness	→	Awareness	.09	
	Voluntariness	→	Differentiation	.11*	
	Voluntariness	→	Relationships	.14*	
	Voluntariness	→	Trust	.08	
Interactions					
	PU_X_VOL[f]	→	Awareness	-.18*	Supported
H6a	PU_X_VOL	→	Differentiation	-.20*	Supported
	PU_X_VOL	→	Relationships	-.18*	Supported
	PU_X_VOL	→	Trust	-.13*	Supported
	EOU_X_VOL	→	Awareness	.05	Rejected
H6b	EOU_X_VOL	→	Differentiation	.00	Rejected
	EOU_X_VOL	→	Relationships	.22*	Supported
	EOU_X_VOL	→	Trust	.04	Rejected
	TRY_X_VOL	→	Awareness	.12	Rejected
H6d	TRY_X_VOL	→	Differentiation	.23***	Supported
	TRY_X_VOL	→	Relationships	.00	Rejected
	TRY_X_VOL	→	Trust	.12	Rejected
H6e	VIS_X_VOL	→	Awareness	.04	Rejected
	VIS_X_VOL	→	Differentiation	.05	Rejected

VIS_X_VOL	→	Relationships	.11	Rejected
VIS_X_VOL	→	Trust	-.03	Rejected

Controls on brand equity dimensions

Age	→	Awareness	.15*
Age	→	Differentiation	.06
Age	→	Relationships	.15*
Age	→	Trust	.19***
Education	→	Awareness	.08
Education	→	Differentiation	.01
Education	→	Relationships	.06
Education	→	Trust	.19***
Income[g]	→	Awareness	.16*
Income	→	Differentiation	.13*
Income	→	Relationships	-.18***
Income	→	Trust	-.20***
InternetBanking_Freq[h]	→	Awareness	.11*
InternetBanking_Freq	→	Differentiation	.08
InternetBanking_Freq	→	Relationships	.16***
InternetBanking_Freq	→	Trust	.12***
MobileBanking_Freq[i]	→	Awareness	.09*
MobileBanking_Freq	→	Differentiation	-.05
MobileBanking_Freq	→	Relationships	.03
MobileBanking_Freq	→	Trust	.03

*** $p < 0.001$
* $p < 0.05$

a. Goodness-of-fit statistics of the measurement model are as follows: CMIN/df =4.00, Root Mean Square Error of Approximation (RMSEA) = .098, Normed Fit Index (NFI) = .76, Comparative Fit Index (CFI) = .81, Incremental Fit Index (IFI) = .81, Tucker-Lewis Index (TLI) = .77.

b. Standardized estimates.

c. The construct Usefulness also includes items measuring compatibility, which is why Hypotheses H3a-f were not included.

d. Brand awareness and brand associations items merged together in EFA and CFA, causing Hypotheses a and b to be combined for hypotheses concerning all innovation attributes.

e. Observability had to be modeled as two constructs, Result Demonstrability and Visibility. Result Demonstrability was eliminated due to multicollinearity issues, therefore H5a-f were tested for Visibility only.

f. Interaction terms: PU_X_VOL= Usefulness X Voluntariness; EOU_X_VOL=Ease of use X Voluntariness; TRY_X_VOL= Trialability X Voluntariness, VIS_X_VOL= Visibility X Voluntariness.

g. Personal monthly net income

h. Frequency at which the respondent uses internet banking services.

i. Frequency at which the respondent uses mobile banking services.

SURVEY USED IN STUDY 1: SMARTPHONE APPLICATIONS FOR MOBILE
BANKING SERVICES

SECTION 1.

		Yes	No
1.	Do you use the Internet?		
2.	Do you own a smartphone?		
3.	Have you ever downloaded and used a mobile application on your smartphone?		

4. What is the brand and model of your smartphone?

Brand: _____ / Model: _____

5. Please select the bank from which you use banking services most frequently.

(1) Garanti Bankası
(2) Yapı Kredi Bankası
(3) Türkiye İş Bankası
(4) Akbank
(5) TEB
(6) ING Bank
(7) Vakıfbank
(8) Ziraat Bankası
(9) Halkbank
(10) Denizbank
(11) Finansbank
(12) Diğer

_____

Note: Please insert the brand of the bank stated in Question 5 when reading the sections marked with XXXXX.

6. How often do you use the services of XXXXX bank?

(1) Very rarely or never
(2) Once or twice a year
(3) Once every few months
(4) Once a month
(5) Twice a month or more

		Yes	No
7.	Do you use the mobile application of XXXXX bank? **(Note: If the answer is "Yes" please proceed to Question 9)**		

8. Please indicate why you do not use the mobile application.

(1) I prefer to use internet banking on a web browser instead.
(2) I prefer to get banking services through face-to-face channels or phone.
(3) I believe the mobile app creates a security risk.
(4) The app does not meet my needs.
(5) It is difficult to use the app.
(6) The mobile app has flaws/errors that prevent me from using it.
(7) I believe that downloading and learning to use the app will cause me to lose too much time.
(8) I do not know about the mobile application.
(9) Other

_____

9. How often do you use the XXXXX mobile application?

(Note: Please mark (1) if your answer to question 7 was "No")

(1) Very rarely or never
(2) Once or twice a year
(3) Once every few months
(4) Once a month
(5) Twice a month or more

SECTION 2

Note: Please evaluate your level of agreement with the statements given below. 1: Strongly disagree, 10: Strongly agree.

10. INN1   I find XXXXX brand to be innovative in comparison to competing brands.

11. INN2   This brand is generally the pioneer within the banking industry in terms of introducing novelties in its services.

12. INN3   This brand is innovative, first with advances in product or service.

13. INN4   XXXXXis the leading brand in the banking industry in terms of introducing novelies to its customers.

14. INN5   XXXXX is one of the leading-edge brands in the banking industry.

15. INN6   I expect XXXXX to be innovative.

SECTION 3

Note: The following questions are about the mobile application of your primary bank identified in Quesiton 5. If you have not used the app, please answer as many of the questions as possible according to your existing knowledge of the application.

16. PU1 Using the XXXXX mobile app improves the way I use the services of this bank.

17. PU2 Using the XXXXX mobile app improves my service experience when performing banking tasks.

18. PU3 Overall, I find using the XXXXX mobile application to be advantageous when using banking services.

19. PU4 Using the mobile application makes my life easier.

20. PU5 Using the XXXXX mobile application enables me to accomplish banking tasks whie on the go.

21. PU6 Using the mobile banking application enables me to accomplish all banking related tasks necessary for me.

22. PU7 I would have no difficulty telling others about the results of using the mobile banking application.

23. PU8 The results of using the XXXXX mobile app are apparent to me.

24. PU9 I would recommend the mobile banking application to others in need of such functionalities.

25. EOU1 I believe that it is easy to get the XXXXX mobile banking application to do what I want to do.

26. EOU2 It was easy for me to download and install the app.

27. EOU3 The XXXXX mobile application was easily accessible through the brand's service channels.

28. EOU4 I find the user interface of XXXXX mobile banking application easy to understand.

29. EOU5 It is practical to perform banking tasks on the XXXXX mobile banking app interface.

30. TRY1 Before deciding whether to use the XXXXX mobile banking application, I was able to properly try it out.

31. TRY2 Before deciding whether to use the XXXXX mobile banking application, I was able to obtain detailed information on its user experience.

32. TRY3 A demo version of the app was available.

33. TRY4 A demo video of how to use the XXXXX mobile banking application was available.

34.	TRY5	XXXXX had provided detailed information on the mobile banking app user experience.
35.	VS1	I know many people who use mobile banking applications.
36.	VS2	I have seen many people who use mobile banking applications.
37.	VS3	I have seen advertisements featuring the mobile banking applications.
38.	VS4	I have seen the mobile banking application featured on XXXXX brand's communication channels or service delivery points.
39.	VS5	Overall, the mobile banking application is quite visible.
40.	VOL1	Using the XXXXX mobile banking application is not compulsory to perform banking services.
41.	VOL2	My use of the XXXXX mobile banking application is voluntary (as opposed to being required by the brand or other party).
42.	VOL3	I can easily stop using the mobile banking application if I want to.
43.	VOL4	I feel obliged to use the mobile banking application in order to benefit fully from the services of XXXXX.
44.	RSK1	The mobile application might not perform well and create problems while I use the services of XXXXX.
45.	RSK2	My signing up for and using a mobile banking application would lead to a loss of privacy for me.
46.	RSK3	When I use the mobile banking application, my personal information may be used without my knowledge.
47.	RSK4	Internet hackers might take control of my credit card / bank account if I used a mobile application.
48.	RSK5	The possible investment of my time involved in switching to and setting up a mobile application makes it risky.
49.	RSK6	The possible time loss from having to set up and learn how to use a mobile application makes it risky.
50.	RSK7	On the whole, I find the mobile banking app very risky to use.
51.	RSK8	Using a mobile application to perform banking tasks would be risky.
52.	RSK9	Using the mobile application would add great uncertainty to my use of banking services.
53.	CPV1	Compared to alternative companies, XXXXX offers attractive service prices.
54.	CPV2	Compared to alternative companies, XXXXX charges me fairly for similar services.
55.	CPV3	XXXXX offers good value for its services.
56.	CPV4	Comparing to what I pay to what I might get from other competitive companies, I think XXXXX provides me with good value.

57.	I-V1	Innovations introduced by XXXXX add to customer value.
58.	I-V2	The mobile application offered by XXXXX adds to customer value.
59.	I-V3	For me, the mobile application has made XXXXX's service more valuable.
60.	I-BE1	The mobile app has added value to the XXXXX brand in customers' perception.
61.	I-BE2	In my opinion, the mobile app positively affected how I perceive the XXXXX brand.

SECTION 4

62.	AW1	When I think of brands in the Turkish banking industry, XXXXX is among the first that come to my mind.
63.	AW2	This brand is the first bank that comes to my mind.
64.	AW3	I am aware of the services provided by XXXXX.
65.	AW4	I know what the XXXXX brand stands for.
66.	AW5	I have a clear opinion about this brand.
67.	AW6	I believe the XXXXX brand is rather well-known among brands in the banking industry.
68.	AS1	XXXXX bank has a distinct brand image.
69.	AS2	I can quickly recall the symbol or logo of XXXXX.
70.	AS3	I have no difficulty imagining this brand in my mind.
71.	AS4	Service staff of XXXXX reflect a positive brand image.
72.	AS5	Customer service staff of XXXXX reflect a positive brand image.
73.	AS6	I feel safe when performing transactions with this bank.
74.	AS7	This bank is a suitable choice for me and customers like me.
75.	DIF1	XXXXX really stands out from other brands in the Turkish banking industry.
76.	DIF2	There are certain characteristics of XXXXX that differentiate it from others in the market.
77.	DIF3	XXXXX makes a difference in the banking industry.
78.	DIF4	I can easily explain to others the difference of XXXXX from its competitors.
79.	QL1	The services of XXXXX have consistent quality.
80.	QL2	In comparison to alternative brands, the likely quality of XXXXX is extremely high.

81.	QL3	In comparison to alternative brands, the quality of XXXXX is the best.
82.	QL4	In comparison to alternative brands, XXXXX has consistent quality.
83.	QL5	I trust the service quality of XXXXX.
84.	RE1	I really like the XXXXX brand.
85.	RE2	I have positive feelings towards XXXXX.
86.	RE3	I would recommend XXXXX to friends and family who ask for advice about banks.
87.	RE4	I will not use the services of other brands when XXXXX is available.
88.	RE5	I talk positively about this brand to others.
89.	RE6	I like to talk about XXXXX to others.
90.	RE7	I like to follow news about XXXXX.
91.	TR1	I feel confidence in XXXXX.
92.	TR2	XXXXX has a good reputation.
93.	TR3	XXXXX is honest.
94.	TR4	I know that if I have a problem as a customer of XXXXX, they would do their best to help me.

SECTION 5

95.	OBE1	If they are providing exactly the same service, I will prefer using the services of XXXXX to the services of any other brand in the same industry.
96.	OBE2	If another bank's services have the same features as XXXXX's services, I will prefer using XXXXX's services.
97.	OBE3	Even if there is a bank that offers the same services as well as XXXXX, I will prefer XXXXX.
98.	OBE4	Even if another bank is by no means different than XXXXX, I will still consider it wiser to use the services of XXXXX.

SECTION 6

Note: The questions we ask within this section will only be used in the analyses of the present academic study, and will not be used for any other purpose. Your personal information will not be asked for, and will not be published individually.

Gender: (1) Female   (2) Male

Age: _____

City of residence: _____

Education level: (1) Elementary school
                               (2) Secondary school
                               (3) High school
                               (4) College or university degree
                               (5) Graduate degree

Average monthly
salary: (1) Less than 1000 TL
                               (2) 1000-1199 TL
                               (3) 1200-1799 TL
                               (4) 1800-2999 TL
                               (5) 3000-4999 TL
                               (6) 5000-7500 TL
                               (7) More than 7500 TL

Student status: (1) Student
                               (2) Not a student

Employment status: (1) Employed
                               (2) Unemployed

Occupation: _____

SURVEY USED IN STUDY 2: SMARTPHONE APPLICATIONS OF AIRLINES

SECTION 1

		Yes	No
1.	Do you use the Internet?		
2.	Do you own a smartphone?		
3.	Have you ever downloaded and used a mobile application on your smartphone?		

4. What is the brand and model of your smartphone?

Brand: _____ / Model: _____

5. Please select the bank from which you use banking services most frequently

(1) THY
(2) Pegasus
(3) Atlasjet
(4) AnadoluJet
(5) Onur Air
(6) Sun Express
(7) Diğer _____

Note: Please insert the brand of the airline stated in Question 5 when reading the sections marked with XXXXX.

6. How often do you use the services of XXXXX bank?

(1) Very rarely or never
(2) Once or twice a year
(3) Once every few months
(4) Once a month
(5) Twice a month or more

	Yes	No
7. Do you use the mobile application of XXXXX airline?		

(Note: If the answer is "Yes" please proceed to Question 9)

8.	Please indicate why you do not use the mobile application.	(1) I prefer to use the internet (on a web browser) instead of the mobile app.

8. Please indicate why you do not use the mobile application.

(1) I prefer to use the internet (on a web browser) instead of the mobile app.
(2) I prefer to get air travel related services through face-to-face channels or phone.
(3) Someone else does my ticketing / check-in tasks, so I don't need it.
(4) The app does not meet my needs.
(5) It is difficult to use the app.
(6) The mobile app has flaws/errors that prevent me from using it.
(7) I believe that downloading and learning to use the app will cause me to lose too much time.
(8) I do not know about the mobile application.
(9) Other

_____

9. How often do you use the XXXXX mobile application?

(Note: Please mark (1) if your answer to question 7 was "No")

(1) Very rarely or never
(2) Once or twice a year
(3) Once every few months
(4) Once a month
(5) Twice a month or more

SECTION 2

Note: Please evaluate your level of agreement with the statements given below.
1: Strongly disagree, 10: Strongly agree.

10.	INN1	I find XXXXX brand to be innovative in comparison to competing brands.
11.	INN2	This brand is generally the pioneer within the airline industry in terms of introducing novelties in its services.
12.	INN3	This brand is innovative, first with advances in product or service.
13.	INN4	XXXXXis the leading brand in the airline industry in terms of introducing novelies to its customers.
14.	INN5	XXXXX is one of the leading-edge brands in the airline industry.
15.	INN6	I expect XXXXX to be innovative.

SECTION 3

Note: The following questions are about the mobile application of your primary airline brand identified in Quesiton 5. If you have not used the app, please answer as many of the questions as possible according to your existing knowledge of the application.

16.	PU1	Using the XXXXX mobile app improves the way I use the services of this airline.
17.	PU2	Using the XXXXX mobile app improves my service experience when performing air travel related tasks.
18.	PU3	Overall, I find using the XXXXX mobile application to be advantageous when using airline services.
19.	PU4	Using the mobile application makes my life easier.
20.	PU5	Using the XXXXX mobile application enables me to accomplish air travel related tasks while on the go.
21.	PU6	Using the mobile airline application enables me to accomplish all air travel related tasks necessary for me.
22.	PU7	I would have no difficulty telling others about the results of using the mobile application.
23.	PU8	The results of using the XXXXX mobile app are apparent to me.
24.	PU9	I would recommend the mobile application to others in need of such functionalities.
25.	EOU1	I believe that it is easy to get the XXXXX mobile airline application to do what I want to do.
26.	EOU2	It was easy for me to download and install the app.
27.	EOU3	The XXXXX mobile application was easily accessible through the brand's service channels.
28.	EOU4	I find the user interface of XXXXX mobile application easy to understand.
29.	EOU5	It is practical to perform tasks on the XXXXX mobile app interface.
30.	TRY1	Before deciding whether to use the XXXXX mobile application, I was able to properly try it out.
31.	TRY2	Before deciding whether to use the XXXXX mobile application, I was able to obtain detailed information on its user experience.
32.	TRY3	A demo version of the app was available.
33.	TRY4	A demo video of how to use the XXXXX mobile application was available.
34.	TRY5	XXXXX had provided detailed information on the mobile app user experience.
35.	VS1	I know many people who use mobile airline applications.

36.	VS2	I have seen many people who use mobile airline applications.
37.	VS3	I have seen advertisements featuring the mobile airline applications.
38.	VS4	I have seen the mobile airline application featured on XXXXX brand's communication channels or service delivery points.
39.	VS5	Overall, the mobile airline application is quite visible.
40.	VOL1	Using the XXXXX mobile airline application is not compulsory to perform banking services.
41.	VOL2	My use of the XXXXX mobile application is voluntary (as opposed to being required by the brand or other party).
42.	VOL3	I can easily stop using the XXXXX mobile application if I want to.
43.	VOL4	I feel obliged to use the mobile application in order to benefit fully from the services of XXXXX.
44.	RSK1	The mobile application might not perform well and create problems while I use the services of XXXXX.
45.	RSK2	My signing up for and using a mobile airline application would lead to a loss of privacy for me.
46.	RSK3	When I use the mobile airline application, my personal information may be used without my knowledge.
47.	RSK4	Internet hackers might take control of my credit card / bank account if I used a mobile application.
48.	RSK5	The possible investment of my time involved in switching to and setting up a mobile application makes it risky.
49.	RSK6	The possible time loss from having to set up and learn how to use a mobile application makes it risky.
50.	RSK7	On the whole, I find the mobile airline app very risky to use.
51.	RSK8	Using a mobile application to perform air travel related tasks would be risky.
52.	RSK9	Using the mobile application would add great uncertainty to my use of air travel services.
53.	CPV1	Compared to alternative companies, XXXXX offers attractive service prices.
54.	CPV2	Compared to alternative companies, XXXXX charges me fairly for similar services.
55.	CPV3	XXXXX offers good value for its services.
56.	CPV4	Comparing to what I pay to what I might get from other competitive companies, I think XXXXX provides me with good value.
57.	I-V1	Innovations introduced by XXXXX add to customer value.
58.	I-V2	The mobile application offered by XXXXX adds to customer value.

59.	I-V3	For me, the mobile application has made XXXXX's service more valuable.
60.	I-BE1	The mobile app has added value to the XXXXX brand in customers' perception.
61.	I-BE2	In my opinion, the mobile app positively affected how I perceive the XXXXX brand.

SECTION 4

62.	AW1	When I think of brands in the Turkish airline industry, XXXXX is among the first that come to my mind.
63.	AW2	This brand is the first airline that comes to my mind.
64.	AW3	I am aware of the services provided by XXXXX.
65.	AW4	I know what the XXXXX brand stands for.
66.	AW5	I have a clear opinion about this brand.
67.	AW6	I believe the XXXXX brand is rather well-known among brands in the airline industry.
68.	AS1	XXXXX airline has a distinct brand image.
69.	AS2	I can quickly recall the symbol or logo of XXXXX.
70.	AS3	I have no difficulty imagining this brand in my mind.
71.	AS4	Service staff of XXXXX reflect a positive brand image.
72.	AS5	Customer service staff of XXXXX reflects a positive brand image.
73.	AS6	I feel safe when flying with this airline.
74.	AS7	This airline is a suitable choice for me, and customers like me.
75.	DIF1	XXXXX really stands out from other brands in the Turkish airline industry.
76.	DIF2	There are certain characteristics of XXXXX that differentiate it from others in the market.
77.	DIF3	XXXXX makes a difference in the airline industry.
78.	DIF4	I can easily explain to others the difference of XXXXX from its competitors.
79.	QL1	The services of XXXXX have consistent quality.
80.	QL2	In comparison to alternative brands, the likely quality of XXXXX is extremely high.
81.	QL3	In comparison to alternative brands, the quality of XXXXX is the best.
82.	QL4	In comparison to alternative brands, XXXXX has consistent quality.
83.	QL5	I trust the service quality of XXXXX.

84.	RE1	I really like the XXXXX brand.
85.	RE2	I have positive feelings towards XXXXX.
86.	RE3	I would recommend XXXXX to friends and family who ask for advice about airlines.
87.	RE4	I will not use the services of other brands when XXXXX is available.
88.	RE5	I talk positively about this brand to others.
89.	RE6	I like to talk about XXXXX to others.
90.	RE7	I like to follow news about XXXXX.
91.	TR1	I feel confidence in XXXXX.
92.	TR2	XXXXX has a good reputation.
93.	TR3	XXXXX is honest.
94.	TR4	I know that if I have a problem as a customer of XXXXX, they would do their best to help me.

SECTION 5

95.	OBE1	If they are providing exactly the same service, I will prefer using the services of XXXXX to the services of any other brand in the same industry.
96.	OBE2	If another airline's services have the same features as XXXXX's services, I will prefer flying with XXXXX.
97.	OBE3	Even if there is an airline that offers the same service at the same level of quality XXXXX, I will prefer XXXXX.
98.	OBE4	Even if another airline is by no means different than XXXXX, I will still consider it wiser to use the services of XXXXX.

SECTION 6

Note: The questions we ask within this section will only be used in the analyses of
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Student status: (1) Student
(2) Not a student

Employment status: (1) Employed
(2) Unemployed

Occupation: _____

ITEMS AND THEIR STANDARDIZED FACTOR LOADINGS
OBTAINED AFTER CFA IN SUDY 1

Item		Standardized Loading
Perceived Usefulness		
PU1	XXXXX markasının akıllı telefonlar için geliştirilen mobil uygulaması, bu bankanın hizmetlerinden faydalanmamı kolaylaştırdı	.805
PU4	XXXXX markasının mobil uygulaması hayatımı kolaylaştırıyor.	.849
PU5	XXXXX markasının mobil uygulaması, hareket halindeyken bankacılık işlemlerimi halletmemi sağlıyor.	.879
PU6	Mobil uygulama, hareket halindeyken ihtiyaç duyduğum tüm bankacılık işlemlerimi halletmemi sağlıyor.	.845
PU9	Benimle benzer ihtiyaçları olan kişilere XXXXX markasının mobil uygulamasını tavsiye ederim.	.838
Perceived Ease of Use		
EOU1	XXXXX mobil uygulamasında istediğim işlemleri kolayca yapabiliyorum.	.849
EOU2	Uygulamayı telefonuma indirmek ve yüklemek oldukça kolaydı.	.825
EOU3	XXXXX hizmet kanalları üzerinden uygulamaya rahatça ulaşabildim.	.828
EOU4	XXXXX mobil uygulamasının kullanıcı arayüzünü anlamak benim için kolay oldu.	.849
EOU5	Bankacılık işlemlerimi mobil uygulama üzerinden kolaylıkla gerçekleştirebiliyorum.	.887
Trialability		
TRY1	XXXXX mobil uygulamasını kullanmaya karar vermeden önce yeterince deneme fırsatı buldum.	.781
TRY2	XXXXX mobil uygulamasını kullanmaya karar vermeden önce, uygulamanın ne işe yaradığı ve arayüzünün nasıl olduğu konusunda detaylı bilgi edinme imkanım oldu.	.924
TRY3	XXXXX mobil uygulamasının deneme (demo) versiyonu mevcuttu.	.885
Visibility		
VS1	XXXXX mobil uygulamasını kullanan çok insan tanıyorum.	.867
VS2	Pek çok insanın XXXXX mobil uygulamasını kullandığına tanık oldum.	.889
VS3	XXXXX mobil uygulamasını tanıtan çok sayıda reklam ve tanıtım gördüm.	.753

Brand awareness

AW1	XXXXX bankası, Türkiye bankacılık sektörünü düşündüğümde ilk aklıma gelen markalar arasında yer alır.	.684
AW2	"Banka" dendiğinde aklıma ilk XXXXX gelir.	.694
AW3	XXXXX bankasının sunduğu hizmetleri iyi biliyorum.	.734
AW4	XXXXX markasının temsil ettiği değerlere aşinayım.	.752
AW5	XXXXX markasına dair epey fikir sahibiyim.	.736

Differentiation

DIF1	XXXXX markası, bankacılık sektöründe diğerlerinden farklı bir konumdadır.	.744
DIF2	XXXXX bankasının onu sektördeki diğer markalardan farklı kılan özellikleri vardır.	.770
DIF3	Bu banka, sektöründe fark yaratır.	.823
DIF4	XXXXX markasının rakiplerinden farkını kolaylıkla anlatabilirim.	.711

Perceived Quality

QUAL1	Bu bankanın hizmet kalitesi her zaman yüksektir.	.729
QUAL2	Sektördeki diğer markalara kıyasla XXXXX markasının hizmet kalitesi çok daha yüksektir.	.859
QUAL3	Sektördeki diğer markalara kıyasla en kaliteli hizmeti XXXXX sunar.	.746

Brand relationships

RE1	XXXXX markasını seviyorum.	.726
RE2	XXXXX markasına karşı duygularım genel olarak olumludur.	.733
RE3	Bu markayı aileme ve yakın dostlarıma tavsiye ederim.	.733
RE5	Başkalarına XXXXX markasından bahsederken olumlu şeyler söylerim.	.765
RE6	Başkalarına bu markadan bahsetmeyi seviyorum.	.699

Brand trust

TR1	XXXXX markasına güveniyorum.	0.843
TR2	Bu bankanın marka itibarı yüksektir.	0.822
TR4	Bir problem yaşadığım takdirde XXXXX bana yardımcı olmak için elinden geleni yapar.	0.677

Voluntariness

VOL1	Bankacılık işlemlerimi gerçekleştirmek için XXXXX mobil uygulamasını kullanmak zorunda değilim.	.595
VOL2	XXXXX mobil uygulamasını zorunlu kalmadan, kendi tercihimle kullanıyorum.	.897
VOL3	Dilediğim takdirde XXXXX mobil uygulamasını kullanmayı tamamen bırakabilirim.	.586

Perceived Risk

RSK1	XXXXX mobil uygulamasının bazen bozulabileceğini ve işlem yaparken problem çıkarabileceğini düşünüyorum.	.804
RSK2	XXXXX mobil uygulamasını kullanmamın kişisel bilgilerimin gizliliği açısından risk yarattığını düşünüyorum.	.894
RSK3	Mobil uygulamayı kullanmam, kişisel bilgilerimin benim haberim olmadan kullanılmasına neden olabilir.	.890
RSK4	Mobil bankacılık uygulamasını kullandığımda, banka hesap veya kredi kartı bilgilerimin kötü niyetli kişilerin eline geçebileceğini düşünüyorum.	.883
RSK5	XXXXX mobil uygulamasını telefonuma indirmek ve yüklemek çok zaman kaybettirebileceğinden kullanmayı riskli buluyorum.	.916
RSK6	XXXXX mobil uygulamasının nasıl kullanılacağını öğrenmek çok vaktimi alabileceğinden kullanmayı riskli buluyorum.	.898
RSK7	Genel olarak XXXXX mobil uygulamasını kullanmanın çok riskli olduğunu düşünüyorum.	.903
RSK8	Bankacılık işlemlerimi gerçekleştirmek için XXXXX mobil uygulamasını kullanmayı riskli buluyorum.	.889
RSK9	XXXXX mobil uygulamasını kullanırsam bankacılık işlemlerim sırasında problem çıkabileceğinden endişe ediyorum.	.877

Perceived Brand Innovativeness

INN1	XXXXX markası rakiplerine kıyasla daha yenilikçidir.	.726
INN2	XXXXX markası getirdiği yeniliklerle sektöründe öncüdür.	.814
INN3	Bankacılık sektöründe inovasyon denince akla ilk XXXXX gelir.	.792
INN4	XXXXX, bankacılık sektörünün öncü markasıdır.	.762
INN5	XXXXX havayolu sektörünün öncü markalarından biridir.	.713

APPENDIX J

CONSTRUCT RELIABILITY AND VALIDITY IN STUDY 1 WITH SQUARE ROOT OF AVE ON THE DIAGONAL

	CR	AVE	MSV	ASV	VOL	AW	TR	RE	QL	DIF	INN	RSK	TRY	VIS	EOU	PU
VOL	0.74	0.50	0.228	0.055	0.71											
AW	0.87	0.52	0.226	0.085	0.09	0.72										
TR	0.83	0.62	0.231	0.132	0.26	0.22	0.78									
RE	0.85	0.54	0.183	0.124	0.22	0.13	0.42	0.73								
QL	0.82	0.61	0.231	0.118	0.24	0.21	0.48	0.43	0.78							
DIF	0.85	0.58	0.160	0.083	0.16	0.12	0.31	0.32	0.20	0.76						
INN	0.87	0.58	0.220	0.115	0.22	0.18	0.45	0.34	0.22	0.34	0.76					
RSK	0.97	0.78	0.050	0.015	-0.06	-0.09	-0.19	-0.16	-0.22	-0.02	-0.11	0.88				
TRY	0.90	0.75	0.228	0.122	0.48	0.48	0.35	0.43	0.41	0.21	0.47	-0.00	0.87			
VIS	0.88	0.70	0.199	0.124	0.32	0.44	0.37	0.39	0.36	0.40	0.45	-0.01	0.27	0.84		
EOU	0.93	0.72	0.167	0.102	0.12	0.41	0.36	0.38	0.39	0.32	0.39	-0.15	0.30	0.32	0.85	
PU	0.93	0.71	0.206	0.115	0.21	0.45	0.40	0.41	0.40	0.37	0.43	-0.13	0.12	0.28	0.37	0.84

PU:	Perceived usefulness	AW:	Brand awareness	VOL:	Perceived voluntariness
EOU:	Perceived ease of use	TR:	Brand trust	RSK:	Perceived risk
VIS:	Visibility	RE:	Brand relationships	INN:	Perceived brand innovativeness
TRY:	Trialability	QL:	Perceived quality		
		DIF:	Brand differentiation		

STRUCTURAL MODEL ESTIMATES IN STUDY 1

Hypothesized Relationship				Estimate[a]	P	Conclusion
Effects of innovation attributes on dimensions of CBBE						
H1	CBBE[b]	<---	Perceived Usefulness			**Supported**
H1a	AW	<---	PU[c]	.058	.073	Perceived usefulness has a direct positive effect on all CBBE dimensions except brand awareness (H1a).
H1b	DIF	<---	PU	.320	***	
H1c	QUAL	<---	PU	.295	**	
H1d	RE	<---	PU	.721	***	
H1e	TR	<---	PU	.338	***	
H2	CBBE	<---	Perceived Ese of Use			**Supported**
H2a	AW	<---	EOU	.083	.090	Perceived ease of use has a direct positive effect on all CBBE dimensions except brand awareness (H2a) and perceived quality (H2c).
H2b	DIF	<---	EOU	.251	***	
H2c	QUAL	<---	EOU	.087	.098	
H2d	RE	<---	EOU	.843	***	
H2e	TR	<---	EOU	.295	***	
H3	CBBE	<---	Trialability			**Supported**
H3a	AW	<---	TRY	.125	***	Perceived trialability has a direct positive effect on brand awareness, brand trust, and a weaker positive effect on brand relationships.
H3b	DIF	<---	TRY	.056	.087	
H3c	QUAL	<---	TRY	.086	.056	
H3d	RE	<---	TRY	.071	*	
H3e	TR	<---	TRY	.140	**	
H4	CBBE	<---	Visibility			**Supported**
H4a	AW	<---	VIS	.376	***	Perceived visibility has a direct positive effect on all CBBE dimensions except perceived quality (H4c).
H4b	DIF	<---	VIS	.537	***	
H4c	QUAL	<---	VIS	.096	.062	
H4d	RE	<---	VIS	.502	***	
H4e	TR	<---	VIS	.612	***	
Effect of perceived brand innovativeness on the innovation attributes – CBBE relationship						
H5a	CBBE	<---	Usefulness X Innovativeness			**Supported**
	AW	<---	PU_X_INN[d]	-.437	***	Perceived brand innovativeness dampens the effect of perceived usefulness on all CBBE dimensions except perceived quality.
	DIF	<---	PU_X_INN	-.296	***	
	QUAL	<---	PU_X_INN	.078	.061	
	RE	<---	PU_X_INN	-.268	***	
	TR	<---	PU_X_INN	-.405	***	
H5b	CBBE	<---	Ease of Use X Innovativeness			**Rejected**
	AW	<---	EOU_X_INN	.054	.083	Perceived brand innovativeness has no effect on the relationship between perceived ease of use and CBBE.
	DIF	<---	EOU_X_INN	-.034	.138	
	QUAL	<---	EOU_X_INN	-.028	.082	
	RE	<---	EOU_X_INN	.019	.094	
	TR	<---	EOU_X_INN	.009	.777	
H5c	CBBE	<---	Trialability X Innovativeness			**Rejected**
	AW	<---	TRY_X_INN	.002	.992	Perceived brand innovativeness has no effect on the relationship between perceived trialability of the innovation and CBBE.
	DIF	<---	TRY_X_INN	.010	.812	
	QUAL	<---	TRY_X_INN	.013	.728	
	RE	<---	TRY_X_INN	.021	.099	
	TR	<---	TRY_X_INN	.019	.097	
H5d	CBBE	<---	Visibility X Innovativeness			**Supported**

	AW	<---	VIS_X_INN	.339	***	Perceived brand innovativeness
	DIF	<---	VIS_X_INN	.365	***	strengthens the positive
	QUAL	<---	VIS_X_INN	.111	**	relationship between perceived
	RE	<---	VIS_X_INN	.187	**	visibility of the innovation and
	TR	<---	VIS_X_INN	.293	***	CBBE.

Direct effect of perceived brand innovativeness on CBBE dimensions

	CBBE	<---	INN			Significant
	AW	<---	INN	.285	***	
	DIF	<---	INN	.450	***	Perceived brand innovativeness
	QUAL	<---	INN	.493	***	has a direct positive effect on all
	RE	<---	INN	.627	***	CBBE dimensions.
	TR	<---	INN	.241	***	

Effect of perceived voluntariness of use on the innovation attributes – CBBE relationship

H6a	CBBE	<---	Usefulness X Voluntariness			**Supported**
	AW	<---	PU_X_VOL	-.008	.092	Perceived voluntariness of use
	DIF	<---	PU_X_VOL	.217	***	strengthens the positive effect of
	QUAL	<---	PU_X_VOL	.017	.058	perceived usefulness on all
	RE	<---	PU_X_VOL	.536	***	CBBE dimensions except brand
	TR	<---	PU_X_VOL	.198	**	awareness and perceived quality.
H6b	CBBE	<---	Ease of Use X Voluntariness			**Supported** (only for Brand Relationships)
	AW	<---	EOU_X_VOL	.001	.880	Perceived voluntariness of use
	DIF	<---	EOU_X_VOL	.009	.917	strengthens the positive
	QUAL	<---	EOU_X_VOL	.007	.392	relationship between perceived
	RE	<---	EOU_X_VOL	.336	***	ease of use and brand
	TR	<---	EOU_X_VOL	.009	.742	relationships, whereas it has no effect on other constructs.
H6c	CBBE	<---	Trialability X Voluntariness			**Rejected**
	AW	<---	TRY_X_VOL	.017	.802	Perceived voluntariness of use
	DIF	<---	TRY_X_VOL	.005	.093	has no effect on the relationship
	QUAL	<---	TRY_X_VOL	.012	.873	between perceived trialability of
	RE	<---	TRY_X_VOL	.021	.215	the innovation and CBBE.
	TR	<---	TRY_X_VOL	.031	.334	

Direct effect of perceived voluntariness of use on CBBE dimensions

	CBBE	<---	Perceived Voluntariness			Partially significant
	AW	<---	VOL	.027	.099	Perceived voluntariness of use
	DIF	<---	VOL	.187	**	has a direct positive effect on
	QUAL	<---	VOL	.013	.329	brand differentiation and brand
	RE	<---	VOL	.320	***	relationships, and no significant
	TR	<---	VOL	.024	.063	effect on other CBBE dimensions.

Effect of perceived risk on the innovation attributes – CBBE relationship

H7a	CBBE	<---	Usefulness X Risk			**Supported**
	AW	<---	PU_X_RISK	-.016	.081	Perceived risk dampens the
	DIF	<---	PU_X_RISK	-.087	*	positive effect of perceived
	QUAL	<---	PU_X_RISK	-.093	*	usefulness on all CBBE
	RE	<---	PU_X_RISK	-.061	*	dimensions except brand
	TR	<---	PU_X_RISK	-.117	**	awareness.
H7b	CBBE	<---	Ease of Use X Risk			**Supported**
	AW	<---	EOU_X_RISK	-.018	.104	Perceived risk dampens the
	DIF	<---	EOU_X_RISK	-.094	*	positive effect of perceived ease
	QUAL	<---	EOU_X_RISK	-.143	***	of use on all CBBE dimensions
	RE	<---	EOU_X_RISK	-.226	***	except brand awareness.

	TR	<---	EOU_X_RISK	-.089	*	
H7c	CBBE	<---	Trialability X Risk			**Supported**
	AW	<---	TRY_X_RISK	.194	***	Perceived risk strengthens the positive effect of perceived trialability on all CBBE dimensions.
	DIF	<---	TRY_X_RISK	.273	***	
	QUAL	<---	TRY_X_RISK	.214	***	
	RE	<---	TRY_X_RISK	.211	***	
	TR	<---	TRY_X_RISK	.636	***	
H7d	CBBE	<---	Visibility X Risk			**Rejected**
	AW	<---	VIS_X_RISK	.015	.061	Perceived risk has no effect on the relationship between perceived visibility of the innovation and CBBE dimensions.
	DIF	<---	VIS_X_RISK	.008	.385	
	QUAL	<---	VIS_X_RISK	.014	.192	
	RE	<---	VIS_X_RISK	.009	.856	
	TR	<---	VIS_X_RISK	.021	.067	

Direct effect of perceived risk on CBBE dimensions

	CBBE	<---	Perceived Risk			Significant
	AW	<---	RISK	-.005	.990	Perceived risk has a direct negative effect on all CBBE dimensions except brand awareness.
	DIF	<---	RISK	-.092	*	
	QUAL	<---	RISK	-.103	**	
	RE	<---	RISK	-.137	**	
	TR	<---	RISK	-.491	***	

*** p < 0.001

** p < 0.01

* p < 0.05

a. Standardized estimates.

b. Variable names of CBBE dimensions: AW=Brand awareness, DIF=Brand differentiation, QUAL=Perceived quality, RE=Brand relationships, TR=Brand trust.

c. Variable names of perceived innovation attributes: PU=Perceived usefulness, EOU=Perceived ease of use, TRY=Perceived trialabiltiy, VIS=Perceived visibility.

d. Names of moderator variables: INN=Perceived brand innovativeness, VOL=Perceived voluntariness, RISK=Perceived risk.

APPENDIX L

ITEMS AND THEIR STANDARDIZED FACTOR LOADINGS
OBTAINED AFTER CFA IN STUDY 2

Item		Standardized Loading
Perceived Usefulness		
PU1	XXXXX markasının akıllı telefonlar için geliştirilen mobil uygulaması, bu havayolu şirketinin hizmetlerinden faydalanmamı kolaylaştırdı.	.815
PU4	XXXXX markasının mobil uygulaması hayatımı kolaylaştırıyor.	.878
PU5	XXXXX markasının mobil uygulaması, hareket halindeyken havayolu seyahat işlemlerimi halletmemi sağlıyor.	.885
PU6	Mobil uygulama, hareket halindeyken ihtiyaç duyduğum tüm havayolu seyahat işlemlerimi halletmemi sağlıyor.	.856
PU9	Benimle benzer ihtiyaçları olan kişilere XXXXX markasının mobil uygulamasını tavsiye ederim.	.846
Perceived Ease of Use		
EOU1	XXXXX mobil uygulamasında istediğim işlemleri kolayca yapabiliyorum.	.862
EOU2	Uygulamayı telefonuma indirmek ve yüklemek oldukça kolaydı.	.868
EOU3	XXXXX hizmet kanalları üzerinden uygulamaya rahatça ulaşabildim.	.857
EOU4	XXXXX mobil uygulamasının kullanıcı arayüzünü anlamak benim için kolay oldu.	.864
EOU5	Havayolu seyahat işlemlerimi mobil uygulama üzerinden kolaylıkla gerçekleştirebiliyorum.	.867
Trialability		
TRY1	XXXXX mobil uygulamasını kullanmaya karar vermeden önce yeterince deneme fırsatı buldum.	.872
TRY2	XXXXX mobil uygulamasını kullanmaya karar vermeden önce, uygulamanın ne işe yaradığı ve arayüzünün nasıl olduğu konusunda detaylı bilgi edinme imkanım oldu.	.898
TRY3	XXXXX mobil uygulamasının deneme (demo) versiyonu mevcuttu.	.859
Visibility		
VS1	XXXXX mobil uygulamasını kullanan çok insan tanıyorum.	.862
VS2	Pek çok insanın XXXXX mobil uygulamasını kullandığına tanık oldum.	.917

	XXXXX mobil uygulamasını tanıtan çok sayıda reklam ve	
VS3	tanıtım gördüm.	.883

Brand awareness

AW3	XXXXX havayolunun sunduğu hizmetleri iyi biliyorum.	.738
AW4	XXXXX markasının temsil ettiği değerlere aşinayım.	.716
AW5	XXXXX markasına dair epey fikir sahibiyim.	.674

Differentiation

DIF1	XXXXX markası, hava taşımacılığı sektöründe diğerlerinden farklı bir konumdadır.	.724
DIF2	XXXXX hava yolunun onu sektördeki diğer markalardan farklı kılan özellikleri vardır.	.741
DIF3	Bu marka sektöründe fark yaratır.	.724
DIF4	XXXXX markasının rakiplerinden farkını kolaylıkla anlatabilirim.	.706

Perceived Quality (CR=.83, AVE=.67)

QUAL1	Bu hava yolunun hizmet kalitesi her zaman yüksektir.	.788
QUAL2	Sektördeki diğer markalara kıyasla XXXXX markasının hizmet kalitesi çok daha yüksektir.	.819
QUAL3	Sektördeki diğer markalara kıyasla en kaliteli hizmeti XXXXX sunar.	.760

Brand relationships

RE1	XXXXX markasını seviyorum.	.690
RE2	XXXXX markasına karşı duygularım genel olarak olumludur.	.666
RE5	Başkalarına XXXXX markasından bahsederken olumlu şeyler söylerim.	.673

Brand trust

TR1	XXXXX markasına güveniyorum.	.753
TR2	Bu bankanın marka itibarı yüksektir.	.767
TR4	Bir problem yaşadığım takdirde XXXXX bana yardımcı olmak için elinden geleni yapar.	.665

Voluntariness

VOL1	Bankacılık işlemlerimi gerçekleştirmek için XXXXX mobil uygulamasını kullanmak zorunda değilim.	.727
VOL2	XXXXX mobil uygulamasını zorunlu kalmadan, kendi tercihimle kullanıyorum.	.855
VOL3	Dilediğim takdirde XXXXX mobil uygulamasını kullanmayı tamamen bırakabilirim.	.733

Perceived Risk

RSK1	XXXXX mobil uygulamasının bazen bozulabileceğini ve işlem yaparken problem çıkarabileceğini düşünüyorum.	.853

RSK2	XXXXX mobil uygulamasını kullanmamın kişisel bilgilerimin gizliliği açısından risk yarattığını düşünüyorum.	.915
RSK3	Mobil uygulamayı kullanmam, kişisel bilgilerimin benim haberim olmadan kullanılmasına neden olabilir.	.917
RSK4	Mobil bankacılık uygulamasını kullandığımda, banka hesap veya kredi kartı bilgilerimin kötü niyetli kişilerin eline geçebileceğini düşünüyorum.	.920
RSK5	XXXXX mobil uygulamasını telefonuma indirmek ve yüklemek çok zaman kaybettirebileceğinden kullanmayı riskli buluyorum.	.910
RSK6	XXXXX mobil uygulamasının nasıl kullanılacağını öğrenmek çok vaktimi alabileceğinden kullanmayı riskli buluyorum.	.920
RSK7	Genel olarak XXXXX mobil uygulamasını kullanmanın çok riskli olduğunu düşünüyorum.	.901
RSK8	Bankacılık işlemlerimi gerçekleştirmek için XXXXX mobil uygulamasını kullanmayı riskli buluyorum.	.876
RSK9	XXXXX mobil uygulamasını kullanırsam bankacılık işlemlerim sırasında problem çıkabileceğinden endişe ediyorum.	.875

Perceived Brand Innovativeness

INN1	XXXXX markası rakiplerine kıyasla daha yenilikçidir.	.724
INN2	XXXXX markası getirdiği yeniliklerle sektöründe öncüdür.	.751
INN3	Bankacılık sektöründe inovasyon denince akla ilk XXXXX gelir.	.720
INN4	XXXXX, bankacılık sektörünün öncü markasıdır.	.751
INN5	XXXXX havayolu sektörünün öncü markalarından biridir.	.724

APPENDIX M

CONSTRUCT RELIABILITY AND VALIDITY IN STUDY 2 WITH SQUARE ROOT OF AVE ON THE DIAGONAL

	CR	AVE	MSV	ASV	VOL	AW	TR	RE	QL	DIF	INN	RSK	TRY	VIS	EOU	PU
VOL	0.82	0.60	0.14	0.04	0.77											
AW	0.75	0.50	0.19	0.06	0.09	0.71										
TR	0.77	0.53	0.19	0.12	0.25	0.22	0.73									
RE	0.72	0.46	0.18	0.11	0.13	0.18	0.42	0.68								
QL	0.83	0.62	0.15	0.09	0.24	0.19	0.38	0.33	0.79							
DIF	0.82	0.52	0.14	0.08	0.15	0.13	0.29	0.38	0.27	0.72						
INN	0.85	0.54	0.19	0.09	0.20	0.18	0.44	0.34	0.22	0.35	0.73					
RSK	0.97	0.81	0.05	0.01	-0.06	-0.09	-0.18	-0.16	-0.22	-0.03	-0.12	0.90				
TRY	0.91	0.77	0.17	0.09	0.37	0.38	0.32	0.41	0.39	0.21	0.37	-0.00	0.88			
VIS	0.92	0.79	0.19	0.09	0.12	0.43	0.36	0.31	0.31	0.31	0.35	-0.01	0.25	0.89		
EOU	0.94	0.75	0.11	0.08	0.12	0.32	0.32	0.33	0.32	0.30	0.30	-0.14	0.29	0.30	0.86	
PU	0.93	0.73	0.15	0.08	0.21	0.25	0.38	0.38	0.32	0.33	0.33	-0.13	0.13	0.26	0.31	0.86

PU:	Perceived usefulness	AW:	Brand awareness	VOL: Perceived voluntariness
EOU:	Perceived ease of use	TR:	Brand trust	RSK: Perceived risk
VIS:	Visibility	RE:	Brand relationships	INN: Perceived brand innovativeness
TRY:	Trialability	QL:	Perceived quality	
		DIF:	Brand differentiation	

APPENDIX N

STRUCTURAL MODEL ESTIMATES IN STUDY 2

Hypothesized Relationship				Estimate[a]	P	Conclusion
Effects of innovation attributes on dimensions of CBBE						
H1	CBBE[b]	<---	Perceived Usefulness			**Supported**
H1a	AW	<---	PU[c]	.022	.195	
H1b	DIF	<---	PU	.689	***	Perceived usefulness has a
H1c	QUAL	<---	PU	.203	**	direct positive effect on all
H1d	RE	<---	PU	.226	***	CBBE dimensions except brand
H1e	TR	<---	PU	.079	*	awareness (H1a).
H2	CBBE	<---	Perceived Ese of Use			**Supported**
H2a	AW	<---	EOU	.031	.051	
H2b	DIF	<---	EOU	.598	***	Perceived ease of use has a
H2c	QUAL	<---	EOU	.176	***	direct positive effect on all
H2d	RE	<---	EOU	.324	***	CBBE dimensions except brand
H2e	TR	<---	EOU	.097	*	awareness (H2a).
H3	CBBE	<---	Trialability			**Supported**
H3a	AW	<---	TRY	.377	***	
H3b	DIF	<---	TRY	.137	***	Perceived trialability has a
H3c	QUAL	<---	TRY	.026	.050	direct positive effect on all
H3d	RE	<---	TRY	.089	*	CBBE dimensions except
H3e	TR	<---	TRY	.217	***	perceived quality (H3c).
H4	CBBE	<---	Visibility			**Supported**
H4a	AW	<---	VIS	.593	***	
H4b	DIF	<---	VIS	.487	***	Perceived visibility has a direct
H4c	QUAL	<---	VIS	.284	***	positive effect on all CBBE
H4d	RE	<---	VIS	.392	***	dimensions.
H4e	TR	<---	VIS	.076	*	
Effect of perceived brand innovativeness on the innovation attributes – CBBE relationship						
H5a	CBBE	<---	Usefulness X Innovativeness			**Supported**
	AW	<---	PU_X_INN[d]	.128	***	
	DIF	<---	PU_X_INN	.098	**	Perceived brand innovativeness
	QUAL	<---	PU_X_INN	.197	***	strengthens the positive effect
	RE	<---	PU_X_INN	.267	***	of perceived usefulness on all
	TR	<---	PU_X_INN	.102	***	CBBE dimensions.
H5b	CBBE	<---	Ease of Use X Innovativeness			**Supported**
	AW	<---	EOU_X_INN	.085	*	Perceived brand innovativeness
	DIF	<---	EOU_X_INN	.099	**	strengthens the positive effect
	QUAL	<---	EOU_X_INN	.108	**	of perceived ease of use on all
	RE	<---	EOU_X_INN	.095	*	CBBE dimensions except brand
	TR	<---	EOU_X_INN	.017	.491	trust.

H5c	CBBE	<---	Trialability X Innovativeness			**Rejected**
	AW	<---	TRY_X_INN	.011	.738	Perceived brand innovativeness has no effect on the relationship between perceived trialability of the innovation and CBBE.
	DIF	<---	TRY_X_INN	.015	.816	
	QUAL	<---	TRY_X_INN	.009	.873	
	RE	<---	TRY_X_INN	.011	.729	
	TR	<---	TRY_X_INN	.012	.742	
H5d	CBBE	<---	Visibility X Innovativeness			**Supported**
	AW	<---	VIS_X_INN	.592	***	Perceived brand innovativeness strengthens the positive relationship between perceived visibility of the innovation and CBBE.
	DIF	<---	VIS_X_INN	.478	***	
	QUAL	<---	VIS_X_INN	.482	**	
	RE	<---	VIS_X_INN	.254	**	
	TR	<---	VIS_X_INN	.176	***	

Direct effect of perceived brand innovativeness on CBBE dimensions

	CBBE	<---	INN			Significant
	AW	<---	INN	.437	***	Perceived brand innovativeness has a direct positive effect on all CBBE dimensions.
	DIF	<---	INN	.625	***	
	QUAL	<---	INN	.208	***	
	RE	<---	INN	.480	***	
	TR	<---	INN	.146	***	

Effect of perceived voluntariness of use on the innovation attributes – CBBE relationship

H6a	CBBE	<---	Usefulness X Voluntariness			**Supported**
	AW	<---	PU_X_VOL	.004	.935	Perceived voluntariness of use strengthens the positive effect of perceived usefulness on all CBBE dimensions except brand awareness.
	DIF	<---	PU_X_VOL	.213	***	
	QUAL	<---	PU_X_VOL	.079	*	
	RE	<---	PU_X_VOL	.253	***	
	TR	<---	PU_X_VOL	.139	***	
H6b	CBBE	<---	Ease of Use X Voluntariness			**Supported**
	AW	<---	EOU_X_VOL	.014	.294	Perceived voluntariness of use strengthens the positive relationship between perceived ease of use and all CBBE dimensions except brand awareness and perceived quality.
	DIF	<---	EOU_X_VOL	.080	*	
	QUAL	<---	EOU_X_VOL	.011	.188	
	RE	<---	EOU_X_VOL	.166	***	
	TR	<---	EOU_X_VOL	.079	*	
H6c	CBBE	<---	Trialability X Voluntariness			**Rejected**
	AW	<---	TRY_X_VOL	.009	.714	Perceived voluntariness of use has no effect on the relationship between perceived trialability of the innovation and CBBE.
	DIF	<---	TRY_X_VOL	.015	.692	
	QUAL	<---	TRY_X_VOL	.007	.809	
	RE	<---	TRY_X_VOL	.019	.599	
	TR	<---	TRY_X_VOL	.024	.300	

Direct effect of perceived voluntariness of use on CBBE dimensions

	CBBE	<---	Perceived Voluntariness			Partially significant
	AW	<---	VOL	.018	.280	Perceived voluntariness of use has a direct positive effect on brand relationships and brand
	DIF	<---	VOL	.026	.053	
	QUAL	<---	VOL	.029	.062	

RE	<---	VOL		.162	***	trust, and no significant effect on other CBBE dimensions.
TR	<---	VOL		.110	**	

Effect of perceived risk on the innovation attributes – CBBE relationship

H7a	CBBE	<---	Usefulness X Risk			**Supported**
	AW	<---	PU_X_RISK	-.013	.391	Perceived risk dampens the positive effect of perceived usefulness on brand relationships and brand trust.
	DIF	<---	PU_X_RISK	-.008	.486	
H7a	QUAL	<---	PU_X_RISK	-.011	.459	
	RE	<---	PU_X_RISK	-.093	*	
	TR	<---	PU_X_RISK	-.106	**	
H7b	CBBE	<---	Ease of Use X Risk			**Supported** (Weakly)
	AW	<---	EOU_X_RISK	-.001	.936	Perceived risk weakly dampens the positive effect of perceived ease of use on brand differentiation, while it has no effect on other CBBE dimensions.
	DIF	<---	EOU_X_RISK	-.089	*	
H7b	QUAL	<---	EOU_X_RISK	-.003	.912	
	RE	<---	EOU_X_RISK	-.015	.718	
	TR	<---	EOU_X_RISK	-.021	.162	
H7c	CBBE	<---	Trialability X Risk			**Supported**
	AW	<---	TRY_X_RISK	.194	***	Perceived risk strengthens the positive effect of perceived trialability on all CBBE dimensions.
	DIF	<---	TRY_X_RISK	.273	***	
H7c	QUAL	<---	TRY_X_RISK	.214	***	
	RE	<---	TRY_X_RISK	.211	***	
	TR	<---	TRY_X_RISK	.636	***	
H7d	CBBE	<---	Visibility X Risk			**Rejected**
	AW	<---	VIS_X_RISK	.015	.061	Perceived risk has no effect on the relationship between perceived visibility of the innovation and CBBE dimensions.
	DIF	<---	VIS_X_RISK	.008	.385	
H7d	QUAL	<---	VIS_X_RISK	.014	.192	
	RE	<---	VIS_X_RISK	.009	.856	
	TR	<---	VIS_X_RISK	.021	.067	

Direct effect of perceived risk on CBBE dimensions

	CBBE	<---	Perceived Risk			Significant
	AW	<---	RISK	-.010	.875	Perceived risk has a direct negative effect on brand relationships and brand trust.
	DIF	<---	RISK	-.018	.796	
	QUAL	<---	RISK	-.009	.899	
	RE	<---	RISK	-.247	***	
	TR	<---	RISK	-.109	**	

*** p < 0.001
** p < 0.01
* p < 0.05
a. Standardized estimates.
b. Variable names of CBBE dimensions: AW=Brand awareness, DIF=Brand differentiation, QUAL=Perceived quality, RE=Brand relationships, TR=Brand trust.
c. Variable names of perceived innovation attributes: PU=Perceived usefulness, EOU=Perceived ease of use, TRY=Perceived trialabiltiy, VIS=Perceived visibility.
d. Names of moderator variables: INN=Perceived brand innovativeness, VOL=Perceived voluntariness, RISK=Perceived risk.

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