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경영학 석사학위논문

**A Study of the Moderating Effect of Utilitarian  
and Hedonic Value on E-Service Quality and User  
Satisfaction in Mobile Applications**

모바일 앱 사용자 만족감에 미치는 E-서비스품질의  
영향에 관한 연구: 앱 유형의 조절 효과

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## ABSTRACT

### A Study of the Moderating Effect of Utilitarian and Hedonic Value on E-Service Quality and User Satisfaction in Mobile Applications

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As the importance of mobile device is prevalent, knowledge of what factors affect satisfaction of mobile applications is critical to both researchers and practitioners. Prior studies on E-service quality focused on websites, online auction, and e-banking. However, there are limited research on E-service quality in mobile application context due to its youth as a technology. Hence, this study focuses on which E-service quality variables influence users' satisfaction in mobile applications.

Based on DeLone and McLean's IS success model and E-service quality developed by Parasuraman et al. (1985) and Zeithaml et al. (2002), an investigation of the models are proposed and investigated. Furthermore, value will be added to examine the moderating effect towards users' satisfaction.

Results show that efficiency, fulfillment, privacy protection of the E-service quality significantly influences user satisfaction. Moreover, user satisfaction is significantly influenced by fulfillment in hedonic applications, whereas efficiency in utilitarian applications.

Overall, this study replicates prior research on E-service quality and satisfaction in the mobile application context to derive influential variables. As with every survey-based research, findings can be difficult to generalize, nevertheless, this research provides implications for further research. Theoretically, this research provides a brief understanding of how hedonic and utilitarian value moderates E-service quality to satisfaction. For practitioners, it gives the opportunity to enhance their understanding of existing customers. This study will be another drive for application development strategies to be examined since it is inevitable for companies to understand its clientele as it can be the differentiation in market share and profitability.

**Keywords:** IS success model, E-service quality, Utilitarian value, Hedonic value, Mobile applications

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# CHAPTER 1 INTRODUCTION

## 1.1 Research Background and Motivation

Mobile devices are everywhere in our surroundings. The various components of mobile devices, ubiquitous, accessibility and mobility, are truly being realized by everyday use. Just as how the internet transformed the traditional business aspects of how sellers and buyers connect, mobile devices are remodeling sellers and buyers. Morgan Stanley analysts summarized the most important online trends and predicted the future of the internet in a 424 page report. The study reports a dramatic increase of mobile devices and estimates that there will be more mobile users than desktop users by 2015.<sup>1</sup> Furthermore, Gartner states that applications are becoming the best means of providing consumers with top-notch services and has the potential to satisfy existing customers and attract new ones.<sup>2</sup>

It is evident that mobile devices and their application stores are impacting the world. Apple Inc. releases press information every quarter and on May 16, 2012 announced that customers downloaded over 50 billion applications from The App Store. This number equals to more than 800 application downloads per second.

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<sup>1</sup> "Internet Trends", 2010. April 12.  
<http://www.morganstanley.com/about/press/articles/4659e2f5-ea51-11de-aec2-33992aa82cc2.html>

<sup>2</sup> "Predicts 2013: Businesses will take consumer apps to the next level", 2012. November. 23  
<https://www.gartner.com/doc/2249215>

Moreover, over nine billion dollars were paid out to developers.<sup>3</sup>

As the importance of mobile device is prevalent, knowledge of what factors affect satisfaction of mobile applications is critical. Application development strategies are inevitable to companies as it can be the differentiation in market share and profitability.

## 1.2 Research Goal and Research Question

The main objective of this study is to investigate which factors of E-service quality significantly affect user satisfaction and to explore the moderating effect of utilitarian and hedonic value. To achieve the goal, this study aims to investigate prior studies to build upon theoretical foundation and examine application users.

Questions to ask are:

- Which E-service quality construct has greater influence in user satisfaction?
- What is the role of value in the research model?

## 1.3 Thesis Outline

The research is organized as follows. Chapter 2 presents theoretical foundations of IS success model, E-service quality and value. These are essential in conceptualizing the moderating effect of value in the mobile application

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<sup>3</sup> “Apple Press Info”, 2013. May 16.

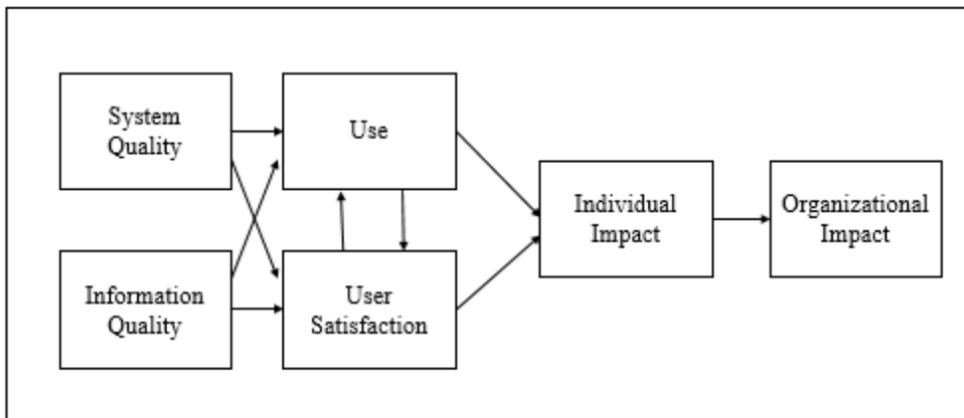
<http://www.apple.com/pr/library/2013/05/16Apples-App-Store-Marks-Historic-50-Billionth-Download.html>

environment. Chapter 3 proceeds to the research model and hypothesis. Chapter 4 offers descriptions on construct definitions, measurements, and methodology. Chapter 5 presents the results of the study. Lastly, chapter 6 discusses the results, limitations and contributions of this research.

# CHAPTER 2 THEORETICAL FOUNDATION

## 2.1 IS Success Model

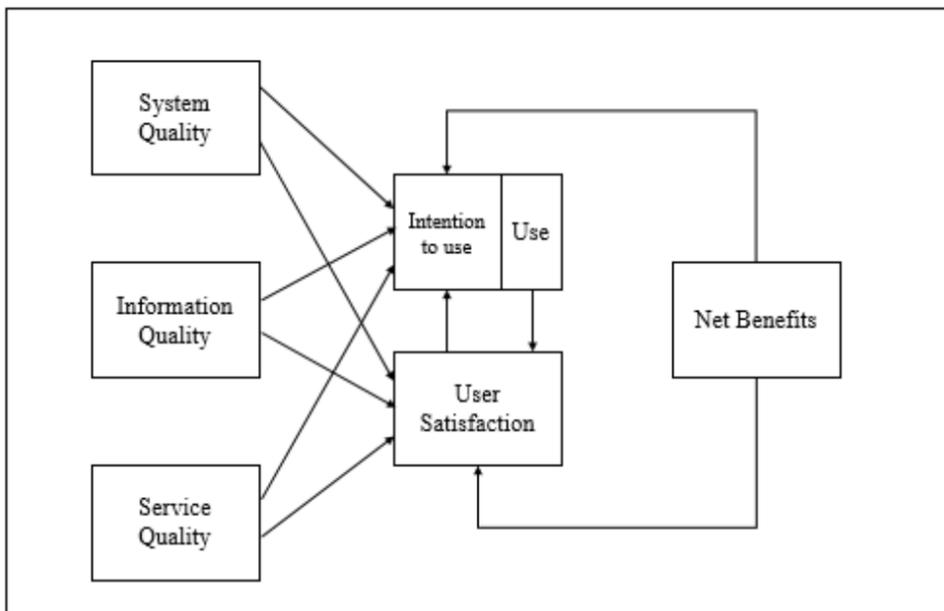
Information system success model is a seminal work by DeLone and McLean. This research examines 180 articles from leading publications from 1970s to 1980s to develop a comprehensive model of information system success. The model classifies IS success as system quality, information quality, use, user satisfaction, individual impact and organizational impact (DeLone et al. 1992).



**Figure 1. DeLone and McLean IS Success Model**

As the figure 1 depicts, the attributes of information system, system quality and information quality, affects the recipients' use and user satisfaction, which in turn influences the organization. This research is the foundation for many studies to understand the value and efficacy of Information system management actions and information system investments (DeLone 2003).

Ten years later, DeLone (2003) updated the IS success model to include service quality and compile individual and organizational impact to net benefits as shown in figure 2. System quality is measured by frequency, time of use, number of assesses, usage pattern and dependency. Information quality is measured in terms of accuracy, timeliness, completeness, relevance and consistency (DeLone and McLean 2002). Service quality is measured by tangible, reliability, responsiveness, assurance, and empathy adopted from SERVQUAL developed by Parasuraman et al. (1985).



**Figure 2. Updated DeLone and McLean IS Success Model**

## 2.2 Service Quality

Service quality is the most researched area of services marketing (Fisk et al. 1993). Service quality has gained major interest since it has strong influence on various

areas of business by affecting customer satisfaction, loyalty and profitability. Service quality has been a continued research to refine the definition, modeling, measurement, data collection procedure and analysis. Since modern day organizations must use technology to differentiate and gain competitive advantage by collecting information and improving service quality.

Most common measure of service quality is SERVQUAL, which was developed by Parasuraman et al. (1985). This research explored SERVQUAL by conducting several focus group interviews. Prior research found that service quality is an assessment of the difference between customers' perceptions and expectations (Gronroos 1978; Parasuraman et al. 1985).

Service quality gained attention from IS literature as DeLone and McLean's IS success model became updated. Pitt et al. (1995) adopted SERVQUAL to measure the support quality of IS department and IT support personnel that system users receive. Five dimensions of SERVQUAL, which are responsiveness, accuracy, reliability, competence and empathy was adopted to examine how end user perceived user satisfaction from the IT personnel. Fisk et al. (1993) included other measures: skill, experience, and capabilities of the support staff in their study. Gefen (2000) studied the service quality of the outsourcing external provider from the growing popularity of outsourcing for systems development.

Despite numerous research on SERVQUAL, researchers had ongoing debate of

whether SERVQUAL being a valid measure for service quality in IS (Pitt et al. 1995; Kettinger and Lee 1997; Van Dyke et al. 1997). Jiang et al. (2002) examined SERVQUAL with confirmatory factor analysis and concluded that it is a satisfactory instrument for measuring IS service quality. To that end, Parasuraman et al. (1985) proposed that future research should consider how customer interaction with technology rather than with service personnel changes the dimensions of service quality. Thus, Zeithaml et al. (2000) developed e-service quality to measure websites.

### **2.2.1 User Satisfaction**

Most commonly acknowledged by researchers to quantify user satisfaction are End User Computing Support (EUCS) and User Information Satisfaction (UIS), which are instruments developed by Doll et al. (1994) and Ives et al. (1983). While previous measurement tools observed the overall user satisfaction, EUCS and UIS measures system quality, information quality, and service quality.

There are numerous research which examines service quality and user satisfaction, but the results have been inconclusive. These inconsistent outcomes may have been caused by multiple methods to measure the relationship. Choe (1996) conducted a study in Korean firm's accounting information systems and found that IS personnel experience does not significantly affect user satisfaction, but identified that different satisfaction results were produced in different implementation stages. Another study by Yoon et al. (1995) examined that expert systems' user satisfaction was impacted

by the skills of the IT personnel. Moreover, Leonard-Barton and Sinha (1993) observed that user satisfaction was significant with the responsiveness of the IS personnel. A case study by Leclercq (2007) found that the function and service of information systems and the quality of support from IS personnel had an impact on user satisfaction. In the electronic-learning environment, Choe (1996) and Chiu et al. (2007) found that there was no significant relationship between service quality and user satisfaction.

Kettinger & Lee (1994) further examined service quality by conducting a survey at university's computing services department and found that service quality is significantly related to user satisfaction. Another study on university support services identified that the most influential variables for user satisfaction were responsiveness (Shaw et al. 2002). While university setting studies found a significant relationship, a study conducted by Aladwani (2002), which examined government organizations, did not find significant relationship between information systems support and user satisfaction. Another study based on websites by Palmer (2002) found that responsiveness was not significant to the user satisfaction. Moreover, Devaraj et al. (2002) studied another Web setting and observed no significance for reliability nor responsibility. Table 1 summarizes previous research on service quality and user satisfaction.

**Table 1. Service Quality and User Satisfaction**

Study	Context	Study Results
Halawi et al. (2007)	Knowledge Management context	+
Leclercq (2007)	IS function and users	+
Shaw et al. (2002)	University support services	+
Yoon et al. (1995)	Technical performance of developer	+
Kettinger and Lee (1994)	University's computer support services	+
Leonard-Barton and Sinha (1993)	Technical performance of developer	+
Devaraj et al. (2002)	Web setting context	Mixed
Chiu et al. (2007)	E-learning environment context	NS
Marble (2003)	Implementation of IS project	NS
Aladwani (2002)	Government Internal support	NS
Palmer (2002)	Study of Web sites	NS
Choe (1996)	IS personnel in accounting IS	NS

Source: Petter et al. 2008

### 2.3 E-Service Quality

E-service quality is an extension of Parauraman's SERVQUAL. Zeithaml et al. (2000) stated that a shift from focus on e-commerce to e-service would be necessary in encouraging repeat purchases and building customer loyalty. E-SERVQUAL consists of seven variables which are efficiency, reliability, fulfillment, privacy, responsiveness, compensation, and contact. Efficiency, reliability, fulfillment, and privacy evaluate the service when customers do not experience problems. Responsiveness, compensation and contact evaluate when customers have service

requests or run into difficulties (Zeithaml et al., 2002). Liu and Arnett (2000) identified service quality as an important measure of web site success by measuring responsiveness, assurance and empathy. Prior research found numerous constructs to extend the dimensions. Table 2 outlines E-service quality measures in prior research.

**Table 2. E-Service Quality Measures**

<b>Study</b>	<b>Context</b>	<b>Constructs</b>
Barnes and Vidgen (2001)	Website Quality of Online shopping	Tangibles, reliability, responsiveness, assurance, empathy
Bauer et. al (2006)	Customer's service quality of online shopping	Responsiveness, reliability, process, functionality/design, enjoyment
Loiacono et. al (2002)	Website quality of website usage	Information quality, tailored communications, trust, response time, ease of understanding, intuitive operations, visual appeal, innovativeness, emotional appeal, consistent image, online completeness, relative advantage
Wolfenbarger and Gilly (2003)	Website quality and customer's service quality of e-retailer	Fulfillment/reliability, website design, privacy/security, customer service
Yoo and Donthu (2002)	Website quality of website usage	Ease of use, aesthetic design, processing speed, security of personal and financial information
Zeithaml et al. (2000)	E-service quality of B2C commerce	Information availability and content, ease of use or usability, privacy/security, graphic style, reliability/fulfillment

Source: Yen and Lu (2008)

## 2.4 Value

Value constructs have been widely utilized in various business research disciplines such as marketing, economics, finance, and information systems. Each field uses different terminologies to describe value.

Consumer behavior literature distinguishes products to contain utilitarian and hedonic value (Holbrook 1999), whereas information system literature identifies system values (Holsapple 2007; Van Der Heijden 2004; Wakefield and Whitten, 2006). Atkin (1973) defines values in information seeking, where utilitarian information seeking are contents that solves problems and hedonic information seeking are contents that serves personal interest.

In online shopping, utilitarian value is relevant for task-specific use such as purchase (Hoffman and Novak, 1996). Utilitarian values are derived from an economic concept that results in productive experiences, whereas hedonic values are the outcome of enjoyable experiences (Carpenter et al. 2005; Rao and Lynch 1993). For example, shoppers may shop online because of the convenience of locating and comparing merchants, evaluating price and quality ratios, and conserving resources (Grewal et al. 2003; Mathwick et al. 2001).

Hedonic value has been the research focus for in-store shopping literature (Babin and Attaway 2000; Darden and Reynolds 1971), however it has been acknowledged to be an important element of online shopping (Burke 1999; Hoffman and Novak

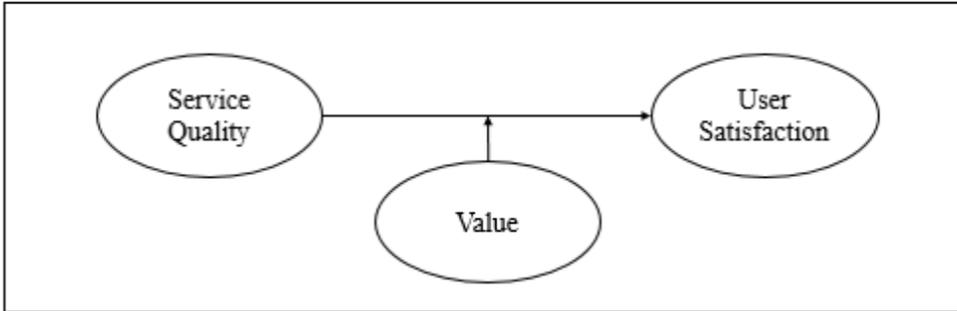
1996). Babin et al. (1994) found that consumers go to shopping not to purchase, but for the experience.

Although there exists numerous available research on value, there is limited value research in mobile context since mobile technologies have just become a commodity. Kim et al. (2007) adopts the value perspective to examine mobile Internet adoption and finds that value is an important element. Wakefield and Whitten (2006) examines the effect of playfulness and perceived enjoyment of mobile devices and observed that value positioning has an impact for maximizing the use of technology.

Since mobile devices are used for utilitarian purposes such as cloud storage and online banking as well as hedonic purposes such as gaming and social media, both mobile values are identified as critical in this study.

## **2.5 Conceptual Framework**

Based on E-service quality (Parasuraman et al. 2005), this study illustrates a conceptual framework of the mobile application model. The framework indicates that E-service quality affects user satisfaction. The combined framework provides the moderating role of utilitarian and hedonic value. Figure 3 presents the conceptual framework.



**Figure 3. Conceptual Model**

## CHAPTER 3 RESEARCH MODEL

Based on theoretical analysis, this study proposes a research model (Figure. 4) for investigating the moderating effect of value on e-service quality and user satisfaction. The model suggests that different constructs of E-service quality are moderated by both utilitarian and hedonic value.

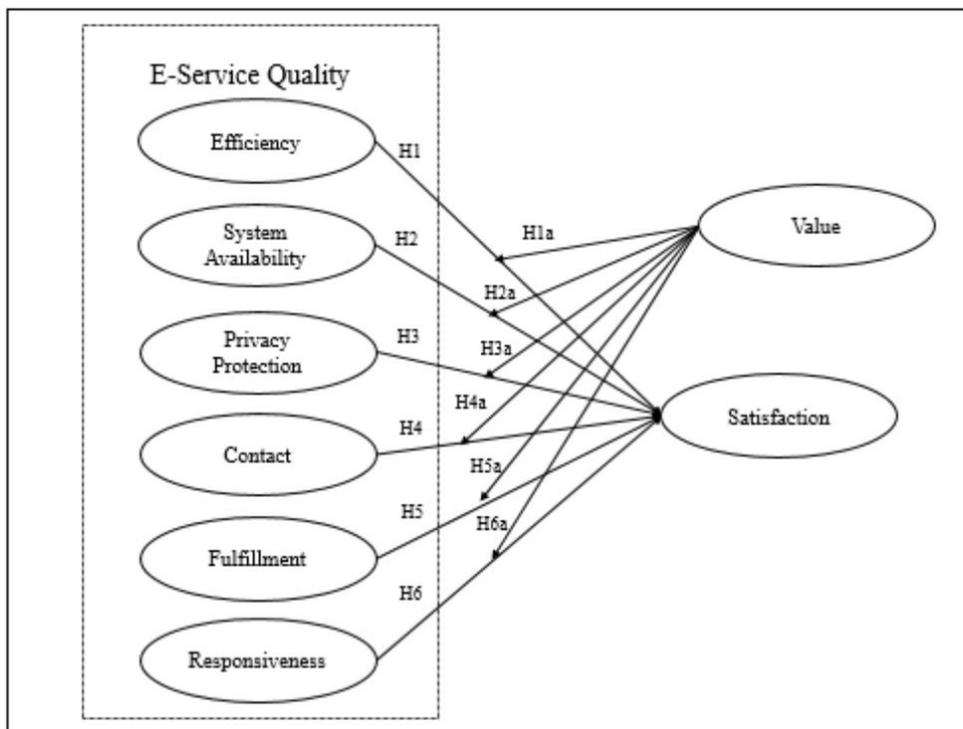


Figure 4. Research Model

### 3.1 Research Hypothesis

Efficiency is defined as the ease and speed of accessing and using the application

(Parasuraman et al. 2005). Efficiency represents simplicity of use, well organized, convenience and easiness of search. Previous findings have demonstrated that the provider (application developer) needs to develop efficient technology, which is key element of the platform (Bauer et al. 2006). The primary objective of a utilitarian information system is to increase user's task performance while encouraging efficiency. Therefore, an important tactic that developers employ is to align system functionality with task requirements, and to provide as little distraction as possible to help the user perform the given task. The dominant objective is productive use (Van der Heijden 2004). From prior literature review, the following hypothesis can be synthesized:

***H1: Efficiency of the application positively influence User Satisfaction.***

***H1a: The effects of Efficiency on User Satisfaction will be stronger in utilitarian applications than the effects in hedonic applications.***

System Availability is defined as the correct technical functioning of the application (Parasuraman et al. 2005). System availability represents how the application is always accessible, launches and operates on-time, does not crash nor freeze. Bauer et al. (2006) examines availability as stability of the data transmission, accurate online processing, and minimal waiting time. Thus, hypothesis 2 is as follows:

***H2: System Availability of the application positively influence User Satisfaction.***

***H2a: The effects of System Availability on User Satisfaction will be stronger in utilitarian applications than the effects in hedonic applications.***

Privacy Protection is the degree to which the application is safe and protects users' information (Parasuraman et al. 2005). It is presented by the application's adequate security features, protection of personal information and transaction (in-app purchase) history from unauthorized access and not sharing personal information with others. Other studies on website defined privacy as protecting anonymity and providing informed consent (Friedman et al. 2000). Accordingly, the following hypothesis can be synthesized:

***H3: Privacy Protection of the application positively influence User Satisfaction.***

***H3a: The effects of Privacy Protection on User Satisfaction will be stronger in utilitarian applications than the effects in hedonic applications.***

Contact is defined as the availability of assistance. Contact is examined by how easy it is to contact the provider. When the user downloads the application, there should be no difficulty of contacting the provider (Parasuraman et al. 2005). From prior literature review, the following hypothesis can be synthesized:

***H4: Contact of the application positively influence User Satisfaction.***

***H4a: The effects of Contact on User Satisfaction will be stronger in utilitarian applications than the effects in hedonic applications.***

Fulfillment is defined as the extent to which the provider's promises about delivery and availability are achieved (Parasuraman et al. 2005). It is measured by how truthful the provider is about its offerings, delivering as promised, satisfying its purpose and giving what the user wanted. Prior research adopted fulfillment as the accurate display and description of a product so that what users receive is what they downloaded (Bauer et al. 2006). Accordingly, the following hypothesis can be synthesized:

***H5: Fulfillment of the application positively influence User Satisfaction.***

***H5a: The effects of Fulfillment on User Satisfaction will be stronger in utilitarian applications than the effects in hedonic applications.***

Responsiveness is defined as the extent of how effective handling of problems and returns (Parasuraman et al. 2005). Responsiveness is represented by the promptness of reaction to requests, provider taking care of problems, handling refunds well and assisting with transaction difficulties. Previous research evaluated responsiveness as

the provider's capability to care for the user beyond the completed transaction and to build long-term relationship (Yen and Lu 2008). Accordingly, the following hypothesis can be synthesized:

***H6: Responsiveness of the application positively influence User Satisfaction.***

***H6a: The effects of Responsiveness on User Satisfaction will be stronger in utilitarian applications than the effects in hedonic applications.***

## **CHAPTER 4 METHODOLOGY**

This chapter provides an overview of the research methods, reliability and validity of the measures and the analytical methods used for testing the model and hypothesis.

### **4.1 Research Design and Analysis Method**

In this study, E-service quality factors that affect user satisfaction are established to be efficiency, system availability, privacy protection, contact, fulfillment, responsiveness and satisfaction. These factors have a direct influence on user satisfaction whereas utilitarian and hedonic values have a moderating effect.

This study employs the measures whose reliability and validity were examined in previous studies. Reliability and validity of the measurement tool follow the framework of Straub (1989). Reliability of the measures were assessed by Cronbach's alpha, composite reliability (CR) and average variance extracted (AVE). Validity of the measures and hypothesis were examined by confirmatory factor analysis (CFA) and partial least square (PLS) technique.

### **4.2 Operational Definition of Constructs**

This research defines E-service quality constructs which are efficiency, system availability, privacy protection, contact, fulfillment and responsiveness based on the work of Parasuraman et al. (2005) and Zeithaml et al. (2002). User satisfaction was

derived from Davies (1989) and Doll et al. (1994). Table 3 summarizes operational definition of research constructs and origins.

**Table 3. Operational Definition of Research Constructs**

<b>Construct</b>	<b>Operational Definition</b>	<b>Reference</b>
<b>Efficiency</b>	The ease and speed of accessing and using the application.	Parasuraman et al. (2005); Zeithaml et al. (2002)
<b>System Availability</b>	The correct technical functioning of the application.	
<b>Privacy Protection</b>	The degree to which the application is safe and protects customer information.	
<b>Contact</b>	The availability of assistance through online.	
<b>Fulfillment</b>	The extent to which the application's promises are fulfilled.	
<b>Responsiveness</b>	Effective handling of problems and refunds through the provider	
<b>User Satisfaction</b>	The pleasurable experience of using the application	Davies (1989); Doll et al. (1994)

### 4.3 Constructs and Measures

Constructs and measures were developed from comprehensive review. Every items used in this study are adopted from previous research and modified to fit the context of mobile applications.

The constructs used in this study: efficiency, system availability, privacy protection, contact, fulfillment, responsiveness and satisfaction refer to E-service quality. These constructs were previously developed by and applied in various

settings such as online auction and website use (Parasuraman et al. 2005). Constructs and their measures are listed in Table 4.

**Table 4. Constructs and Measures**

<b>Construct</b>		<b>Measure</b>
<b>Efficiency</b>	EF1	This application is simple to use.
	EF2	This application is well organized.
	EF3	This application makes it easy to find what I need.
	EF4	This application is convenient.
<b>System Availability</b>	SA1	This application is always available.
	SA2	This application launches and runs right away.
	SA3	This application does not freeze.
	SA4	This application does not crash.
<b>Privacy Protection</b>	PP1	This application has adequate security features.
	PP2	This application does not share my personal information with others.
	PP3	This application protects my personal information from unauthorized access.
	PP4	This application protects information about my transactions (in-app purchase).
<b>Contact</b>	CO1	The provider is available for contact.
	CO2	I am able to easily contact the provider.
	CO3	There is no difficulty contacting the provider.
	CO4	The application offers the ability to contact provider if there is a problem.
<b>Fulfillment</b>	FF1	I get what I purchased for from this application.
	FF2	This application is truthful about its offerings.
	FF3	This application is delivered as promised.
	FF4	This application satisfies its purpose.
<b>Responsiveness</b>	RP1	Offers promptness of reaction to requests.
	RP2	Tells me what to do if my transaction is not

		processed.
	RP3	Takes care of problems promptly.
	RP4	Handles application refunds well.
<b>Satisfaction</b>	ST1	I am pleased using this application.
	ST2	I am satisfied using this application.
	ST3	I am delighted using this application.
	ST4	My feelings about using this application were good.

#### 4.4 Data Collection

A pilot study was conducted with mobile device experts to collect preliminary data for exploratory data analysis, access validity and reliability. Scales and questionnaire were modified as necessary to fit the context of this study.

Respondents of this study were college students from South Korea. South Korean university students are ideal candidates since they are well educated and technology-savvy. Samples was collected using questionnaire consisting of 28 scales.

The research sample consists two different groups, hedonic and utilitarian mobile application users. The average age of the respondents was 27 and the median age was 26. Table 5 summarizes the demographic characteristics of the collected sample.

**Table 5. Demographic Information of Respondents (N=256)**

Measure	Items	Frequency	Percentage
Gender	Male	155	60%
	Female	102	40%
Age	Under 20	17	7%
	20-25	112	44%

	26-30	86	34%
	Over 30	41	16%
Education	Bachelor's Degree	193	75%
	Master's Degree	49	19%
	Doctoral Degree	14	6%
Platform	iOS	154	60%
	Andriod	103	40%

Samples was collected from a web-based survey using Google Doc Forms. First page of the questionnaire consisted of the purpose of this study and confidentially statement acknowledged by the Statistics Act. Definition of mobile applications and its providers were arranged with examples to ensure that respondents did not misinterpret. Total of 896 viewed the questionnaire, however 273 (30%) responses were completed. Invalid responses were omitted and a total of 256 valid responses were acceptable for data analysis. Cohen's power primer (Cohen 1992) was utilized to find the required sample size, which was 84.

## CHAPTER 5 ANALYSIS AND RESULTS

### 5.1 Descriptive Statistics

Descriptive statistics analysis was executed using SPSS 19.0. Table 6 displays the mean, standard deviation, and factor loading of each item.

**Table 6. Descriptive Statistics**

<b>Construct</b>	<b>Indicator</b>	<b>Mean</b>	<b>S.D.</b>	<b>Loading</b>
<b>Efficiency</b>	EF1	5.59	1.309	0.8763
	EF2	5.71	1.111	0.8378
	EF3	5.39	1.334	0.865
	EF4	5.53	1.306	0.8867
<b>System Availability</b>	SA1	6.09	1.186	0.8196
	SA2	5.99	1.135	0.8732
	SA3	5.64	1.355	0.7964
	SA4	5.82	1.294	0.7426
<b>Privacy Protection</b>	PP1	4.78	1.485	0.7969
	PP2	4.46	1.845	0.7776
	PP3	4.59	1.547	0.8724
	PP4	4.83	1.506	0.8398
<b>Contact</b>	CO1	3.96	1.765	0.8713
	CO2	3.89	1.732	0.9487
	CO3	3.9	1.686	0.9089
	CO4	3.82	1.721	0.9467
<b>Fulfillment</b>	FF1	5.72	1.215	0.8625
	FF2	5.74	1.207	0.8699
	FF3	5.88	1.201	0.9105
	FF4	5.94	1.132	0.8869
<b>Responsiveness</b>	RP1	4.21	1.493	0.9142
	RP2	4.2	1.464	0.929
	RP3	4.15	1.509	0.929

	RP4	4.1	1.387	0.8501
<b>Satisfaction</b>	ST1	5.5	1.275	0.8972
	ST2	5.67	1.149	0.8679
	ST3	5.22	1.416	0.8801
	ST4	5.24	1.412	0.891

## **5.2 Measurement Model Analysis**

SmartPLS was employed to examine factor analysis and structural and measurement model. This research conducted Partial least square (PLS) for measurement validation and to test the structural model. Structural equation modeling (SEM) analysis was chosen over regression analysis since SEM has the ability to evaluate all of the paths in one analysis (Barclay et al. 1995; Gefen et al. 2000). PLS employs a component-based approach for estimation, unlike a covariance-based structural equation modeling method such as LISREL and AMOS (Chin et al. 1999). This research followed previous framework to assess the measurement model as well as the hypotheses by examining the path coefficients.

### **5.2.1 Common Method Bias**

Common method variance (CMV) can be a problem because it provides an alternative explanation for the observed relationships between measures (Podsakoff et al. 2003).

To assess the problems of common method biases in survey design, Harman's

single factor test was conducted in this study (Podsakoff et al. 2003). If a substantial common method bias is present, a single factor emerges and explains the majority of the total variance (Harman 1976). The data set of 256 mobile application users produced 6 factors (67.53%), and the first factor variance accounted for an acceptable rate of 34.55%.

Variables in the theoretical model were entered in exploratory factor analysis (EFA). EFA describes that the measurement items should converge into the corresponding factor so that each item loads with a high coefficient is placed onto only one factor (Urbach and Ahlemann 2010).

### **5.2.2 Reliability**

Measurement model's reliability was evaluated by using composite reliability (CR), Cronbach's alpha and average variance extracted (AVE). Previous research acknowledged that Cronbach's alpha and composite reliability should be above 0.7 (Fornell and Larker 1981; Nunnally 2010) and AVE should be greater than 0.5 (Fornell and Larker, 1981; Cohen 1998) to satisfy construct validity. Furthermore, greater than 0.6 or 0.7 individual item loadings are needed to confirm internal consistency (Chin 1998).

**Table 7. Construct Reliability (N=256)**

<b>Construct</b>	<b>Composite Reliability</b>	<b>Cronbach's Alpha</b>	<b>AVE</b>
<b>Efficiency</b>	0.9562	0.94	0.8454
<b>System Availability</b>	0.9234	0.8895	0.7511
<b>Privacy Protection</b>	0.9338	0.9057	0.7791
<b>Contact</b>	0.893	0.8423	0.6766
<b>Fulfillment</b>	0.9483	0.9277	0.8211
<b>Responsiveness</b>	0.8833	0.8248	0.655
<b>Satisfaction</b>	0.9347	0.9071	0.7816
Cut off value	> 0.7	> 0.7	> 0.5

### 5.2.3 Validity

Measurement Model's content validity and construct validity was examined following Straub et al. (2004)'s recommendations. Straub (1989) recommended two methods which were literature review and pilot tests. Extensive literature review was conducted in chapter 2 and survey items were reviewed by 3 MIS scholars and pretested by 16 mobile users to satisfy content validity.

Discriminant validity was examined by cross-examination of factor loading of each item with the corresponding constructs (Chin 1998). Each factor should show higher values on its assigned constructs than on other constructs. Cross factor

loadings are presented in Table 8. Utilitarian and hedonic value cross factor loadings are presented in Appendix A.

Fornell and Lacker (1981) developed a method for testing discriminant validity, which was comparing the square roots of the AVE for each construct with the correlation matrix of constructs. Every diagonal elements, which are square roots of the AVE, should be greater than any other element in the corresponding rows or column entries. The results in Table 9 indicate that the square roots of AVE is higher than the latent variable correlations for every value.

**Table 8. Cross Factor Loadings (N=256)**

	<b>CO</b>	<b>EF</b>	<b>FF</b>	<b>PP</b>	<b>RP</b>	<b>SA</b>	<b>ST</b>
<b>CO1</b>	0.8713	0.1102	0.0666	0.3642	0.6085	0.0194	0.1527
<b>CO2</b>	0.9487	0.1751	0.139	0.4064	0.6686	0.0948	0.2419
<b>CO3</b>	0.9089	0.1238	0.1345	0.4109	0.6123	0.0967	0.1536
<b>CO4</b>	0.9467	0.1972	0.1446	0.4327	0.653	0.0805	0.2506
<b>EF1</b>	0.0612	0.8763	0.5455	0.317	0.1739	0.5195	0.6031
<b>EF2</b>	0.1745	0.8378	0.5852	0.3697	0.2357	0.4232	0.5125
<b>EF3</b>	0.2338	0.865	0.5655	0.435	0.2767	0.4034	0.5473
<b>EF4</b>	0.1402	0.8867	0.4847	0.3586	0.2917	0.4639	0.5625
<b>FF1</b>	0.1037	0.4938	0.8625	0.3483	0.2217	0.483	0.5166
<b>FF2</b>	0.1397	0.5052	0.8699	0.4101	0.2306	0.5022	0.5124
<b>FF3</b>	0.1108	0.5787	0.9105	0.3692	0.1903	0.4921	0.5761
<b>FF4</b>	0.1268	0.621	0.8869	0.3512	0.2092	0.5351	0.6365
<b>PP1</b>	0.3706	0.3952	0.4412	0.7969	0.3413	0.1862	0.4379
<b>PP2</b>	0.3182	0.2679	0.2812	0.7776	0.3611	0.0704	0.2691
<b>PP3</b>	0.4044	0.3794	0.3318	0.8724	0.4331	0.1895	0.3883
<b>PP4</b>	0.3465	0.3315	0.297	0.8398	0.4054	0.2038	0.4378

<b>RP1</b>	0.6339	0.25	0.2219	0.412	0.9142	0.1151	0.2873
<b>RP2</b>	0.6192	0.263	0.2521	0.4354	0.929	0.2282	0.3043
<b>RP3</b>	0.6594	0.2878	0.2334	0.4254	0.929	0.2189	0.3187
<b>RP4</b>	0.6003	0.2018	0.1428	0.4347	0.8501	0.1393	0.2091
<b>SA1</b>	0.0426	0.4867	0.4643	0.1685	0.1922	0.8196	0.4005
<b>SA2</b>	0.117	0.4333	0.5095	0.1906	0.2227	0.8732	0.441
<b>SA3</b>	0.0802	0.3969	0.443	0.1731	0.1355	0.7964	0.3973
<b>SA4</b>	0.0087	0.3765	0.4288	0.1345	0.061	0.7426	0.2972
<b>ST1</b>	0.1362	0.5626	0.5703	0.3495	0.2325	0.4443	0.8972
<b>ST2</b>	0.1786	0.5824	0.7022	0.4663	0.2874	0.4784	0.8679
<b>ST3</b>	0.2697	0.5608	0.4938	0.4726	0.3277	0.3781	0.8801
<b>ST4</b>	0.2245	0.5661	0.4662	0.3988	0.2612	0.3871	0.891

**Table 9. Correlations and Square Roots of AVE (N=256)**

	<b>CO</b>	<b>EF</b>	<b>FF</b>	<b>PP</b>	<b>RP</b>	<b>SA</b>	<b>ST</b>
<b>CO</b>	0.9195	0	0	0	0	0	0
<b>EF</b>	0.1726	0.8667	0	0	0	0	0
<b>FF</b>	0.1362	0.6275	0.8827	0	0	0	0
<b>PP</b>	0.4402	0.4251	0.4172	0.8226	0	0	0
<b>RP</b>	0.6929	0.2804	0.2401	0.4683	0.9061	0	0
<b>SA</b>	0.0824	0.5243	0.5711	0.2082	0.1976	0.8093	0
<b>ST</b>	0.2275	0.6436	0.6395	0.4797	0.3144	0.4807	0.8841

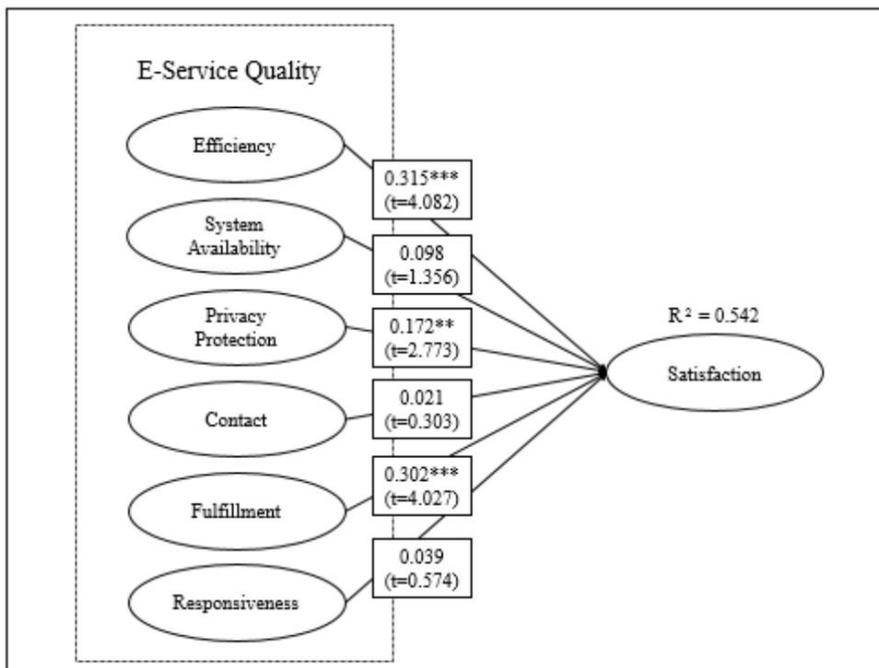
\*Square root of the AVE are presented diagonally in greyed areas

### 5.3 Structural Model Analysis

Measurement model analysis indicated that the model has reasonable reliability and validity and has no issues with common method bias. Thus, PLS analysis was

conducted by bootstrapping technique with 1000-times iteration (Chin 1998) to investigate the structural model and the t-values for corresponding path coefficients. The results are shown in Figure 5.

Three of six paths appeared to be statistically significant, which indicates that H1, H3 and H5 are supported. In detail, efficiency (path coefficients: 0.315,  $p < 0.001$ ), privacy protection (path coefficients: 0.172,  $p < 0.05$ ) and fulfillment (path coefficients: 0.302,  $p < 0.001$ ) influences user satisfaction. Approximately 54% ( $R^2 = 0.542$ ) of the variance of user satisfaction is explained by E-service quality constructs.



**Figure 5. Structural Model Results**

## 5.4 Moderating Effect Analysis

This research tests the moderating effect of utilitarian and hedonic value in service quality and satisfaction by multiple group analysis method. Collected samples were divided into two groups (Utilitarian and Hedonic) to find statistical significance with T-statistics using the following formula (Chin 2000; Keil et al. 2000) in figure 6.

$$\frac{Path_{sample\ 1} - Path_{sample\ 2}}{\left[ \sqrt{\frac{(m-1)^2}{(m+n-s)} * S.E.^2_{sample\ 1} + \frac{(n-1)^2}{(m+n-2)} * S.E.^2_{sample\ 2}} \right] * \left[ \sqrt{\frac{1}{m} - \frac{1}{n}} \right]}$$

**Figure 6. Multi-Group Analysis Equation**

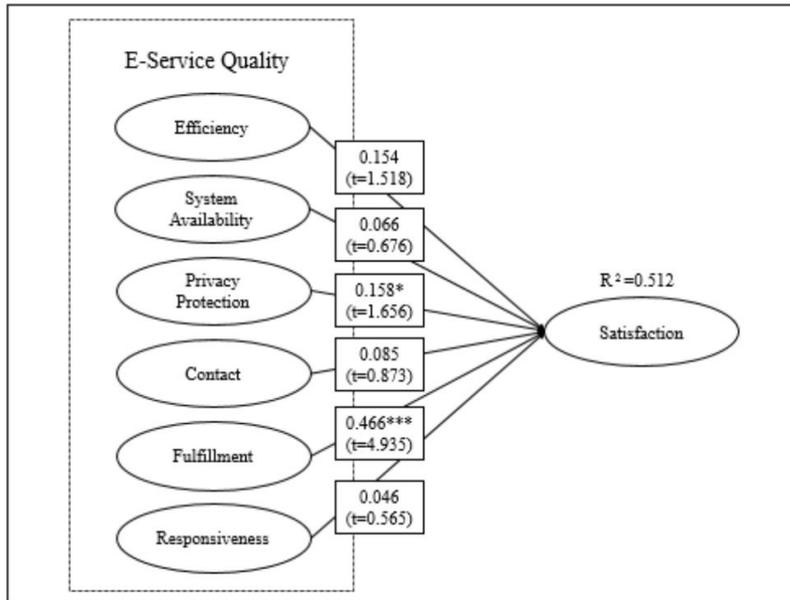
Baron and Kenny (1986) states that a moderator is a qualitative or quantitative variable that affects the direction and strength of the relationship between an independent variable and dependent variable. To test the effect of moderating variable, original sample was categorized into two group: hedonic and utilitarian. Hedonic user sample totaled 127 (49.6%) and utilitarian user sample totaled 129 (50.4%) of the original sample.

To compare the significant effects of the moderating effect, PLS was utilized to obtain the parameter estimates while bootstrapping was utilized to find the standard errors of the estimates and the t-value statistics. Next, the path coefficients for the two groups were tested for significance using an independent t-test. The results of the hypothesis are summarized in Figures 7, 8 and Table 10. The results of t-statistics

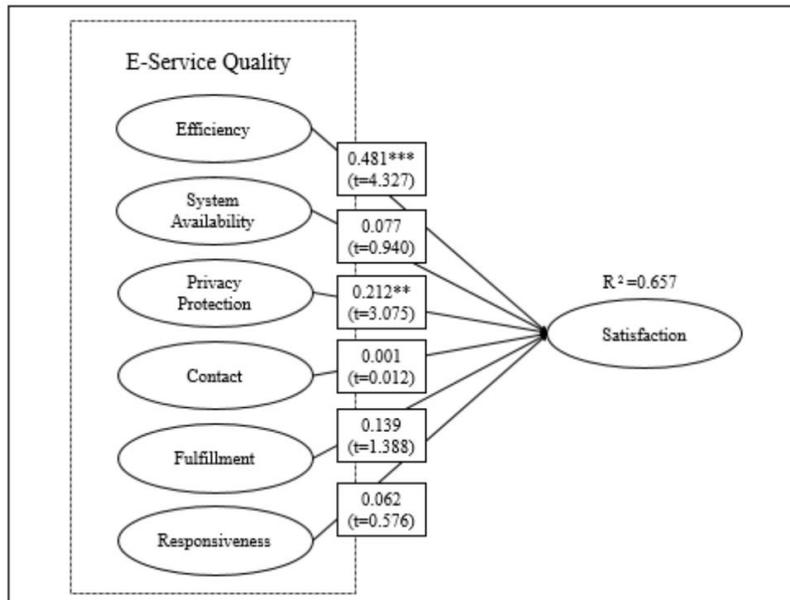
support that the effects of efficiency are greater for utilitarian applications than those for hedonic applications (H1a). As shown in Table 10, only two independent variables are significant.

**Table 10. Moderating Effect of Value (UT: utilitarian; H: hedonic)**

<b>Path</b>	<b>Group</b>	<b>P.C.</b>	<b>S.E</b>	<b>T</b>	<b>Result</b>
Efficiency → Satisfaction	UT	0.4766	0.1112	2.151	<b>Significant</b>
	H	0.1536	0.1016		
System Availability → Satisfaction	UT	0.0753	0.0817	0.058	Insignificant
	H	0.068	0.097		
Privacy Protection → Satisfaction	UT	0.2174	0.0688	0.449	Insignificant
	H	0.1649	0.0954		
Contact → Satisfaction	UT	0.0108	0.0879	0.495	Insignificant
	H	0.0755	0.0976		
Fulfillment → Satisfaction	UT	0.1374	0.1001	- 2.378	<b>Significant</b>
	H	0.4637	0.0945		
Responsiveness → Satisfaction	UT	0.0584	0.107	0.005	Insignificant
	H	0.0591	0.0819		



**Figure 7. PLS Analysis Result: Hedonic Value**



**Figure 8. PLS Analysis Result: Utilitarian Value**

# **CHAPTER 6 DISCUSSION AND CONCLUSION**

## **6.1 Summary of Findings**

The main objective of this study was to investigate which variables of E-service quality greatly influences user satisfaction, as well as, how utilitarian and hedonic value applications moderate E-service quality and user satisfaction. Research model based on updated DeLone and McLean IS success model and E-service quality was proposed, validated and empirically tested. Summary of the results of the hypotheses is shown in Table 11.

First, this research has attempted to analyze E-service quality and explore the impact of each variables in the mobile application context. This research indicates that efficiency, privacy protection and fulfillment have significant effect on user satisfaction. This implies that system availability, contact, and responsiveness needs to be considered whether these variables are a sufficient measure for E-service quality in mobile application context.

Second, this research has taken hedonic and utilitarian value into consideration as the moderating effect. The results indicate that fulfillment have significant influence in users' satisfaction on hedonic applications whereas efficiency have significant impact on utilitarian applications. Prior research has focused on utilitarian information systems as the dominant artifact, but this research shows that hedonic

information systems should be looked upon.

Third, privacy protection has significant influence on user satisfaction in all three models. Comparing the two categorizes of application value, this study can infer that utilitarian application privacy protection has greater influence on satisfaction than that of hedonic application.

## **6.2 Implications**

This study provides several theoretical contributions in the research areas of mobile service quality and value. First, although service quality and e-service quality has been a popular topic of research, there has not been a significant research around e-service quality. This research has dived into E-service quality to examine each constructs' influence on satisfaction.

Second, mobile application values were conceptualized from a user's perspective. Even though, value has research on many disciplines, its application on mobile device setting has been limited. This study has provides how different value applications affect users' e-service quality.

In addition, this study has implications for practitioners. E-service quality and user satisfaction is moderated by different values, which are both popular topics in other disciplines such as marketing and psychology. By examining which factors impact, practitioners are able to grasp which factors to focus during application development.

Furthermore, this study will enable practitioners to reduce the number of employees that they have for after service. All three models indicate that application a/s has very little influence in user satisfaction. Although utilitarian applications have higher influence, it is still very minor.

**Table 11. Summary of Test Results**

Hypothesis	Path	P.C.	T	Significance	Result	
<b>H1</b>	Efficiency → Satisfaction	0.315	4.082	P < 0.01	<b>Supported</b>	
<b>H2</b>	System Availability → Satisfaction	0.098	1.356	-	Not Supported	
<b>H3</b>	Privacy Protection → Satisfaction	0.172	2.773	P < 0.05	<b>Supported</b>	
<b>H4</b>	Contact → Satisfaction	0.021	0.303	-	Not Supported	
<b>H5</b>	Fulfillment → Satisfaction	0.302	4.027	P < 0.01	<b>Supported</b>	
<b>H6</b>	Responsiveness → Satisfaction	0.039	0.574	-	Not Supported	
<b>H1a</b>	Efficiency → Satisfaction	UT	0.4766	2.151	P < 0.10	<b>Supported</b>
		H	0.1536			
<b>H2a</b>	System Availability → Satisfaction	UT	0.0753	0.058	-	Not Supported
		H	0.068			
<b>H3a</b>	Privacy Protection	UT	0.2174	0.449	-	Not

	→ Satisfaction	H	0.1649			Supported
<b>H10</b>	Contact → Satisfaction	UT	0.0108	0.495	-	Not Supported
		H	0.0755			
<b>H5a</b>	Fulfillment → Satisfaction	UT	0.1374	- 2.378	P <0.05	<b>Supported</b>
		H	0.4637			
<b>H12</b>	Responsiveness → Satisfaction	UT	0.0584	0.005	-	Not Supported
		H	0.0591			

Group (UT: utilitarian; H: hedonic)

### 6.3 Limitations and Future Research

There are several limitations to this study. First, this research is conducted by online survey. Although there are numerous advantages of online survey: population access, saving time and money, there can be errors from incomplete and unacceptable responses and multiple submissions (Schmidt 1997). Second, this research cannot be generalized since the sample collected were university students due to resource restrictions. Also, the survey responses were collected from one specific application, thus the respondent can have different attitudes and perception of E-service quality and user satisfaction on different applications. Third, this research is one-way structural model, thus, results can limit how user satisfaction can influence other variables such as intention to use and loyalty.

Future research should extend the model to include intention to use and loyalty

since mobile applications are easy to erase and downloading is simple from millions available on various platforms. Also, studying other moderating effects such as cultural differences can be interesting as there are significant difference in mobile device adoption rate. Furthermore, since compensation, another variable of E-service quality was exempted, extending the research to examine the effect of paid and free application can be appealing.

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## APPENDIX A. Questionnaire

본 설문은 개인이 사용하고 있는 모바일 앱의 서비스 품질에 대한 만족도를 얻기 위한 것으로, 이와 관련한 사항들을 조사하기 위하여 작성되었습니다. 설문 조사는 익명으로 실시되며, 응답하신 내용은 비밀이 보장되고 조사 결과는 오직 학술 목적으로만 사용됨을 알려드립니다. 본 설문의 어떠한 항목에도 정답은 없으며, 응답자께서 느끼고 생각하시는 대로만 모든 항목에 체크해 주시면 됩니다. 부디 성의 있는 답변을 해주시길 부탁 드립니다. 감사합니다.

해당 앱 사용에 관한 질문

가장 많이 사용하는 앱	① 애니팡 ② 캔디크러시 ③ 애버노트 ④N드라이브 ⑤드랍박스
앱을 사용하는 플랫폼	① iPhone ② iPad ③ 스마트폰(AndroidOS) ④ 태블릿(AndroidOS)

해당 앱 서비스품질에 대한 질문

효율	전혀 그렇지 않다	그렇지 않다	별로 그렇지 않다	보통 이다	약간 그렇다	그렇다	매우 그렇다
해당 앱은 사용하기 쉽다	①	②	③	④	⑤	⑥	⑦
해당 앱의 디자인은 깔끔하다	①	②	③	④	⑤	⑥	⑦
해당 앱은 내가 찾고 싶은 내용을 쉽게 찾을 수 있다.	①	②	③	④	⑤	⑥	⑦
해당 앱은 사용이 편리하다	①	②	③	④	⑤	⑥	⑦

이용	전혀 그렇지 않다	그렇지 않다	별로 그렇지 않다	보통 이다	약간 그렇다	그렇다	매우 그렇다
해당 앱은 내가 원할 때 항상 실행할 수 있다	①	②	③	④	⑤	⑥	⑦
해당 앱은 항상 사용할 수 있다	①	②	③	④	⑤	⑥	⑦
해당 앱을 가동 후 즉시 실행된다	①	②	③	④	⑤	⑥	⑦
해당 앱을 실행시 다른앱과 충돌하지않는다	①	②	③	④	⑤	⑥	⑦

성취	전혀 그렇지 않다	그렇지 않다	별로 그렇지 않다	보통 이다	약간 그렇다	그렇다	매우 그렇다
내가 해당 앱을 통해서 사용하고자 했던 서비스를 정확히 제공 해준다	①	②	③	④	⑤	⑥	⑦
내가 해당 앱을 통해 얻고자 한바를 제공해 준다	①	②	③	④	⑤	⑥	⑦
해당 앱 서비스는 내 사용 목적에 일치한다	①	②	③	④	⑤	⑥	⑦
해당 앱 서비스는 내 사용 목적을 충족시켜 준다	①	②	③	④	⑤	⑥	⑦

보안	전혀 그렇지 않다	그렇지 않다	별로 그렇지 않다	보통 이다	약간 그렇다	그렇다	매우 그렇다
해당 앱은 적절한 보안 기능을 제공한다	①	②	③	④	⑤	⑥	⑦
해당 앱은 나의 개인 정보를 공유 하지 않는다	①	②	③	④	⑤	⑥	⑦
해당 앱은 무단 액세스로부터 개인 정보를 보호한다	①	②	③	④	⑤	⑥	⑦
해당 앱은 거래내역을 보호한다	①	②	③	④	⑤	⑥	⑦

연락	전혀 그렇지 않다	그렇지 않다	별로 그렇지 않다	보통 이다	약간 그렇다	그렇다	매우 그렇다
앱 제공자와 온라인으로 쉽게 연락할 수 있다	①	②	③	④	⑤	⑥	⑦
해당 앱 제공자는 연락이 가능하다	①	②	③	④	⑤	⑥	⑦
해당 앱 제공자와 연락시 어려움이 없다.	①	②	③	④	⑤	⑥	⑦
해당 앱 제공자랑 빠르게 연락할 수 있다	①	②	③	④	⑤	⑥	⑦

대응	전혀 그렇지 않다	그렇지 않다	별로 그렇지 않다	보통 이다	약간 그렇다	그렇다	매우 그렇다
앱 제공자들은 해당 앱에 대해 문제를 제기할 경우, 신속히 반응한다	①	②	③	④	⑤	⑥	⑦
앱 제공자들은 결제 오류시 해결방안을 제시해준다	①	②	③	④	⑤	⑥	⑦
앱 제공자들은 신속하게 문제를 해결 해준다	①	②	③	④	⑤	⑥	⑦
서비스에 대한 환불을 요구할 경우 쉽게 환불처리를 해준다	①	②	③	④	⑤	⑥	⑦

만족	전혀 그렇지 않다	그렇지 않다	별로 그렇지 않다	보통 이다	약간 그렇다	그렇다	매우 그렇다
해당 앱 사용은 즐거웠다 (Pleased)	①	②	③	④	⑤	⑥	⑦
해당 앱 사용에 만족했다 (Satisfied)	①	②	③	④	⑤	⑥	⑦
해당 앱 사용이 기뻐다 (Delighted)	①	②	③	④	⑤	⑥	⑦
해당 앱 사용이 재미있었다 (Felt Good)	①	②	③	④	⑤	⑥	⑦

<b>연령</b>	만( )세	<b>성별</b>	① 남 ② 여	<b>학력</b>	① 대학 재학 ② 대학원(석사) ③ 대학원(박사)
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## APPENDIX B.

\*Group1: Hedonic application users

Reliability of Hedonic Constructs (N=127)

<b>Construct</b>	<b>Composite Reliability</b>	<b>Cronbach Alpha</b>	<b>AVE</b>
<b>Efficiency</b>	0.9519	0.9342	0.8321
<b>System Availability</b>	0.9139	0.8747	0.7263
<b>Privacy Protection</b>	0.927	0.8957	0.7605
<b>Contact</b>	0.8892	0.8367	0.6676
<b>Fulfillment</b>	0.9506	0.9324	0.828
<b>Responsiveness</b>	0.8597	0.7876	0.6063
<b>Satisfaction</b>	0.9404	0.9156	0.7977

Correlations and Square Roots of AVE. Hedonic (N=127)

	<b>CO</b>	<b>EF</b>	<b>FF</b>	<b>PP</b>	<b>RP</b>	<b>SA</b>	<b>ST</b>
<b>CO</b>	0.9122	0	0	0	0	0	0
<b>EF</b>	0.159	0.8522	0	0	0	0	0
<b>FF</b>	0.102	0.5188	0.8721	0	0	0	0
<b>PP</b>	0.4922	0.3903	0.3994	0.8171	0	0	0
<b>RP</b>	0.6388	0.1628	0.1056	0.4359	0.9099	0	0
<b>SA</b>	-0.0376	0.3342	0.4326	0.1337	-0.02	0.7787	0
<b>ST</b>	0.2621	0.5007	0.6513	0.4752	0.2426	0.3358	0.8931

\*Square root of the AVE are presented diagonally in greyed areas

Cross Factor Loadings of Hedonic Constructs (N=127)

	<b>CO</b>	<b>EF</b>	<b>FF</b>	<b>PP</b>	<b>RP</b>	<b>SA</b>	<b>ST</b>
<b>CO1</b>	0.8542	0.0426	0.0047	0.4033	0.5155	-0.0908	0.1728
<b>CO2</b>	0.9381	0.1463	0.0953	0.4348	0.6094	-0.0492	0.2739
<b>CO3</b>	0.9169	0.1266	0.0813	0.5028	0.597	0.003	0.1728
<b>CO4</b>	0.9369	0.2186	0.1525	0.466	0.6003	-0.0093	0.2898
<b>EF1</b>	0.0002	0.8686	0.4628	0.2973	0.0673	0.3931	0.4351
<b>EF2</b>	0.1425	0.8673	0.4685	0.2952	0.1227	0.2662	0.4565
<b>EF3</b>	0.2989	0.8567	0.4966	0.4017	0.185	0.2328	0.4493
<b>EF4</b>	0.0866	0.8152	0.3176	0.34	0.1899	0.2446	0.3536
<b>FF1</b>	0.0751	0.3988	0.8551	0.3057	0.0866	0.3989	0.4987
<b>FF2</b>	0.0601	0.4067	0.8567	0.4274	0.099	0.3918	0.5
<b>FF3</b>	0.0742	0.4782	0.902	0.3487	0.072	0.3719	0.6041
<b>FF4</b>	0.1365	0.5076	0.8737	0.3213	0.1102	0.3562	0.6436
<b>PP1</b>	0.4444	0.3491	0.464	0.8014	0.3053	0.1725	0.4886
<b>PP2</b>	0.3685	0.3162	0.2593	0.8283	0.3914	0.0038	0.3217
<b>PP3</b>	0.3775	0.3334	0.2742	0.8559	0.3987	0.105	0.3217
<b>PP4</b>	0.3904	0.263	0.2418	0.7806	0.3499	0.1195	0.3651
<b>RP1</b>	0.5461	0.1301	0.0915	0.3886	0.9344	-0.0677	0.2477
<b>RP2</b>	0.5952	0.1312	0.1085	0.4154	0.9307	-0.0413	0.2131
<b>RP3</b>	0.6212	0.1942	0.1384	0.396	0.9211	0.0506	0.2542
<b>RP4</b>	0.5776	0.1265	0.0001	0.4037	0.8509	-0.0219	0.1212
<b>SA1</b>	-0.141	0.3667	0.3258	0.0659	-0.045	0.7411	0.2397
<b>SA2</b>	0.0463	0.3117	0.407	0.1749	0.0414	0.8677	0.3375
<b>SA3</b>	-0.0007	0.1599	0.3061	0.0787	-0.0394	0.7759	0.2575
<b>SA4</b>	-0.0679	0.1799	0.2863	0.0636	-0.0531	0.7218	0.1672
<b>ST1</b>	0.1642	0.4029	0.602	0.4026	0.1715	0.2943	0.9062
<b>ST2</b>	0.1756	0.4827	0.6893	0.45	0.205	0.3475	0.9011
<b>ST3</b>	0.315	0.4315	0.502	0.4383	0.2709	0.277	0.8671
<b>ST4</b>	0.2973	0.4675	0.5119	0.4036	0.2241	0.272	0.8976

\*Group 2: Utilitarian application users

Reliability of Utilitarian Constructs (N=129)

<b>Construct</b>	<b>Composite Reliability</b>	<b>Cronbach Alpha</b>	<b>AVE</b>
<b>Efficiency</b>	0.9595	0.9439	0.8557
<b>System Availability</b>	0.9341	0.9057	0.7801
<b>Privacy Protection</b>	0.942	0.9178	0.8024
<b>Contact</b>	0.8945	0.8447	0.6809
<b>Fulfillment</b>	0.9428	0.9188	0.8051
<b>Responsiveness</b>	0.9033	0.8568	0.7008
<b>Satisfaction</b>	0.9338	0.9054	0.7793

Correlations and Square Roots of AVE. Utilitarian (N=129)

	<b>CO</b>	<b>EF</b>	<b>FF</b>	<b>PP</b>	<b>RP</b>	<b>SA</b>	<b>ST</b>
<b>CO</b>	0.9250	0	0	0	0	0	0
<b>EF</b>	0.2071	0.8832	0	0	0	0	0
<b>FF</b>	0.1488	0.766	0.8958	0	0	0	0
<b>PP</b>	0.3604	0.4853	0.4332	0.8252	0	0	0
<b>RP</b>	0.7287	0.4085	0.3854	0.4823	0.8973	0	0
<b>SA</b>	0.2199	0.6923	0.7468	0.3142	0.425	0.8371	0
<b>ST</b>	0.2594	0.7689	0.6805	0.5596	0.4472	0.6066	0.8828

\*Square root of the AVE are presented diagonally in greyed areas

Cross Factor Loadings of Utilitarian Constructs (N=129)

	<b>CO</b>	<b>EF</b>	<b>FF</b>	<b>PP</b>	<b>RP</b>	<b>SA</b>	<b>ST</b>
<b>CO1</b>	0.8829	0.1846	0.107	0.3087	0.6795	0.1397	0.1859
<b>CO2</b>	0.9574	0.2309	0.1588	0.3513	0.7095	0.2497	0.2893
<b>CO3</b>	0.901	0.1428	0.1633	0.2822	0.6004	0.2148	0.205
<b>CO4</b>	0.9564	0.1951	0.1181	0.3785	0.7024	0.1922	0.2563
<b>EF1</b>	0.1628	0.8843	0.6767	0.392	0.3174	0.6201	0.7239
<b>EF2</b>	0.2069	0.8241	0.726	0.4576	0.3603	0.5821	0.5814
<b>EF3</b>	0.1536	0.8898	0.6436	0.4741	0.3621	0.5876	0.6671
<b>EF4</b>	0.2124	0.9314	0.6734	0.4043	0.4065	0.6536	0.7298
<b>FF1</b>	0.1128	0.6131	0.8665	0.3978	0.3724	0.5978	0.5728
<b>FF2</b>	0.1983	0.6523	0.8883	0.375	0.3741	0.6631	0.5974
<b>FF3</b>	0.1242	0.7178	0.9241	0.3932	0.3219	0.6638	0.6005
<b>FF4</b>	0.1007	0.752	0.9032	0.3872	0.317	0.7415	0.6613
<b>PP1</b>	0.2509	0.4696	0.3949	0.8021	0.3563	0.2292	0.4478
<b>PP2</b>	0.2105	0.2442	0.282	0.7199	0.2909	0.1691	0.2877
<b>PP3</b>	0.3994	0.4444	0.3806	0.8808	0.4415	0.3111	0.5202
<b>PP4</b>	0.298	0.4029	0.3613	0.8867	0.4674	0.295	0.5325
<b>RP1</b>	0.6993	0.3857	0.3603	0.4089	0.8897	0.3212	0.3896
<b>RP2</b>	0.6351	0.3955	0.4063	0.4467	0.9203	0.4952	0.43
<b>RP3</b>	0.6813	0.3916	0.3264	0.4381	0.9374	0.3823	0.43
<b>RP4</b>	0.6	0.2828	0.2828	0.4408	0.8385	0.3114	0.3481
<b>SA1</b>	0.2474	0.5733	0.6414	0.3022	0.4504	0.8667	0.5162
<b>SA2</b>	0.2062	0.5276	0.6396	0.2295	0.4171	0.8822	0.5219
<b>SA3</b>	0.1726	0.6328	0.61	0.2911	0.333	0.8266	0.5438
<b>SA4</b>	0.0993	0.587	0.6128	0.224	0.2032	0.7686	0.4407
<b>ST1</b>	0.195	0.7	0.6236	0.3919	0.3739	0.5683	0.8885
<b>ST2</b>	0.1871	0.6851	0.7265	0.5084	0.3908	0.6142	0.8502
<b>ST3</b>	0.2652	0.6705	0.5169	0.5615	0.4208	0.47	0.893
<b>ST4</b>	0.2716	0.6558	0.5239	0.5115	0.3922	0.4812	0.8985

## 초 록

### 모바일 앱 사용자 만족감에 미치는 E-서비스품질의 영향에 관한 연구: 앱 유형의 조절 효과

우리 주변에 모바일 기기가 만연하게 됨에 따라, 모바일 앱의 만족감에 영향을 미치는 요인이 무엇인지에 대한 것은 학계와 실무 모두에 중요한 이슈가 되고 있다. E-서비스의 품질에 대한 선행 연구들은 주로 웹사이트나 온라인 경매, 인터넷 뱅킹에 관심을 기울여 왔다. 그러나 모바일 앱은 그 기술의 발달이 비교적 최근에 이루어진 것으로써 관련 연구가 부족한 실정이다. 따라서 본 연구는 모바일 앱 사용자의 만족감에 영향을 미치는 E-서비스 품질의 다양한 요인들을 파악하고자 한다.

본 연구의 연구모형은 DeLone과 McLean의 IS 성공모델과 Parasuraman 등(1985)과 Zeithami 등(2002)에 의해 밝혀진 E-서비스 품질 요인을 근거로 설정되었으며, 앱의 유형이 사용자의 만족감을 조절하는 변수로 설정되었다.

연구의 결과는 E-서비스 품질의 효율성, 성취감, 보안성이 사용자 만족감에 유의미한 영향을 주는 것으로 나타났다. 또한 앱의 유형에 따라 쾌락성 앱은 성취감이 사용자의 만족감에 큰 영향을 미치는 반면, 실용성 앱은 효율성이 사용자의 만족감에 큰 영향을 미치는 것으로 나타났다.

결과적으로, 이번 연구는 E-서비스 품질과 만족감에 대한 기존 연구를 모바일 앱에 적용한 것이라 할 수 있다. 설문조사를 기반으로 하는 모든 연구가 그렇듯이, 연구의 결과는 일반화하기에는 다소 문제가 있다. 그럼에도 불구하고 본 연구는 향후 연구를 위해 몇 가지의 시사점을 제

공한다. 학문적으로, 본 연구는 쾌락성 앱과 실용성 앱을 사용함에 있어 E-서비스의 품질이 사용자의 만족감에 영향을 미칠 때, 앱의 유형에 따라 영향력의 크기가 조절된다는 것을 밝혀내었다는 시사점을 가진다. 이 결과는 실무적으로 현재의 고객에 대한 이해를 향상시키는 데에 기여할 수 있을 것이다. 이를 통해 기업차원에서 시장 점유율을 높이고 경쟁사와 수익률 측면에서 차별화를 달성하기 위한 앱 개발 전략을 추진할 때, 고객을 이해함에 있어 반드시 알아야 할 또 하나의 특성을 알 수 있게 할 것이다.

**Keywords:** IS 성공모델, E-서비스 품질, 앱 유형, 모바일 앱

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