

FACTORS AFFECTING THE ADOPTION OF MOBILE SERVICES

Thesis submitted to the  
Institute for Graduate Studies in Social Sciences  
in partial fulfillment of the requirements for the degree of

Master of Arts  
in  
Management Information Systems

by  
Banu Kargin

Boğaziçi University

2007

## Thesis Abstract

Banu Kargin, “Factors Affecting the Adoption of Mobile Services”

Mobile technologies are gaining more popularity and diffusing into every aspect of our life. Value Added Services (VAS) has a huge impact on consumers’ usage patterns and has become a significant differentiator across the operators. These led to new opportunities in innovation of differentiating services. Better services will be best developed by understanding the requirements of the users. In this study, our intention is to shed some light on the process of mobile service adoption by investigating value added services especially for informative services. The study started with background research to identify factors determining the adoption of mobile services; then continued with qualitative studies; namely interviews, brainstorming sessions, and expert focus group. After these studies, an experimental study was conducted. During this experimental study, a conjoint analysis had been conducted. During conjoint analysis, product preference factors were explored. Service cost and service speed were seen as critical factors. In addition to these, according to results of regression analyses which are done to find the determinants of mobile service intention, attitude and usefulness were found to be significant factors parallel to literature. Personalization, mobility, user experience and content were identified as indirect determinants of attitude mediated through usefulness.

## Tez Özeti

Banu Kargın, “Mobil Servis Kullanımını Etkileyen Faktörler”

Mobil teknolojiler popülerliğini gün geçtikçe artırıyor ve hayatımızın her alanına nüfuz ediyor. Katma Değerli Servislerin, tüketicilerin kullanım alışkanlıkları üzerinde büyük etkisi vardır ve bu servisler operatörler arasında ayrıştırıcı etken konumuna gelmiştir. Bu da farklılaştırıcı hizmetler yaratılması için yeni fırsatların çıkmasını sağlamıştır. Daha iyi servisler, kullanıcıların ihtiyaçlarını anlayarak karşılanabilir. Bu çalışmada amacımız, katma değerli servisleri, özellikle bilgi servislerini araştırarak mobil servislerin benimsenmesi sürecini aydınlatmaktır. Çalışmaya, literatür araştırması yapılarak başlandı. Daha sonra, röportaj, beyin fırtınası ve uzman odak grup nitel çalışmaları yapıldı. Bu çalışmalar sonrasında, deneysel çalışma yapıldı. Deneysel çalışma sırasında, birleşik (conjoint) analiz yapıldı. Bu analiz ile ürün seçim faktörleri araştırıldı. Servis maliyeti ve servis hızı önemli faktörler olarak ortaya çıktı. Bunlara ek olarak yapılan regresyon çalışması ile mobil servis kullanım niyetine yol açan faktörler bulunmaya çalışıldı. Literatüre paralel olarak, servisi kullanma isteği ve fayda, niyeti doğrudan etkileyen faktörler olarak bulundu. Kişiselleştirme, mobil olma, kullanıcı deneyimi ve servis içeriği de kullanma isteğini fayda üzerinden etkileyen faktörler olarak belirlendi.

## ACKNOWLEDGEMENTS

It's been a tiring but also very exciting and interesting two years working on this study. I would like to thank everybody who gave support and helped me in completing this study.

First of all, my advisor, Associate Professor A. Nuri Başoğlu is the most important person that I would like to give my sincere thanks to. His support, contribution and patience have made this research successful. His valuable comments and advice, vast knowledge of theory and methodologies made this study a high quality one.

Secondly, my friend, Mehmet Gören gave his time and energy in various parts of this study. His analytical and practical support is a valuable factor which contributed to the success of this study. I would like to thank Çağla Özen for all her help in providing me with information about the methodology and techniques.

Finally, I would like to thank all the people who attended the qualitative studies and responded to the surveys conducted in this study.

## CONTENTS

PREFACE .....	xi
CHAPTER 1: INTRODUCTION.....	1
CHAPTER 2: LITERATURE REVIEW .....	4
Diffusion of Innovations .....	4
Theory of Reasoned Action (TRA) .....	6
Theory of Planned Behavior (TBP).....	7
Technology Acceptance Model (TAM) & TAM2 .....	8
Unified Theory of Acceptance and Use of Technology (UTAUT).....	11
Conjoint Analysis .....	12
Steps in Conjoint Analysis.....	14
Mobile Technologies .....	15
Global System for Mobile Communications (GSM) .....	16
General Packet Radio Service (GPRS) .....	17
Enhanced Data GSM Environment (EDGE) .....	18
Third Generation (3G) .....	19
Value Added Services (VAS) .....	19
CHAPTER 3: FRAMEWORK.....	22
Definition & Significance of the Study .....	22
Research Taxonomy .....	23
Research Frameworks and Hypotheses .....	25
Mobile Service Conjoint Framework.....	25
Determinants of Mobile Service Intention Framework .....	28
CHAPTER 4: METHODOLOGY .....	36
Interviews.....	37
Brainstorming Sessions.....	38
Expert Focus Group Study .....	39
Experimental Study and Pre-Test.....	40
CHAPTER 5: FINDINGS.....	46
Findings of Interviews .....	46
Findings of the Brainstorming Session.....	49
Findings of Expert Focus Group Study .....	51
Findings of the Experimental Study .....	51
Profile of Respondents.....	51
Reliability Analysis .....	54
Descriptive Statistics .....	55
Results of Mobile Service Conjoint Analysis .....	56
Determinants of Mobile Service Intention Conceptual Model .....	62
Sample Clustering.....	64
Implications .....	69
Limitations of the Study .....	72
CHAPTER 6: CONCLUSION .....	73

REFERENCES .....	75
APPENDICES .....	80
APPENDIX A .....	80
Interview Questions (Turkish).....	80
Interview Questions (English).....	81
APPENDIX B.....	82
Brainstorming Invitation Mail (Turkish) .....	82
Brainstorming Invitation Mail (English) .....	83
Brainstorming Thanks E-Mail (Turkish) .....	84
Brainstorming Thanks E-Mail (English) .....	84
Pictures Used in Brainstorming Session Study .....	85
APPENDIX C.....	87
Expert Focus Group Questions (Turkish) .....	87
Expert Focus Group Mail (Turkish) .....	89
Expert Focus Group Mail (Turkish) .....	89
APPENDIX D .....	91
Experimental Study Questionnaire (English).....	91
Questionnaire (Turkish) .....	92
E-Mail of Experimental Study (Turkish) .....	93
E-Mail of Experimental Study (English) .....	93
Main Screens of Experimental Study .....	94
Screens of Product Alternatives of Experimental Study.....	99
APPENDIX E.....	103
Cluster Analysis Results .....	103
APPENDIX F .....	107
Regression Analysis Results .....	107

## FIGURES

Fig. 2.1 Diffusion process (Rogers, 1995).....	5
Fig. 2.2 Theory of reasoned action (Fishbein & Ajzen, 1975).....	7
Fig. 2.3 Theory of planned behavior (Ajzen, 1991) .....	8
Fig. 2.4 Original version of TAM (Davis, 1989) .....	9
Fig. 2.5 Original version of TAM2 (Venkatesh & Morris, 2000).....	10
Fig. 2.6 UTAUT (Venkatesh, 2003) .....	12
Fig. 3.1 Proposed mobile service adoption taxonomy .....	24
Fig. 3.2 Mobile service conjoint framework .....	25
Fig. 3.3 Determinants of mobile service intention framework.....	28
Fig. 4.1 Example question for expert focus group study .....	40
Fig. 4.2 Screen-shot of alternative selection screen .....	42
Fig. 5.1 Mobile service adoption taxonomy.....	46
Fig. 5.2 Results of mobile service conjoint model .....	58
Fig. 5.3 Conjoint result of subject - II.....	60
Fig. 5.4 Market share chart of alternatives.....	61
Fig. 5.5 Results of determinants of mobile service intention framework.....	62
Fig. 5.6 Cluster analysis result with four clusters (service attributes).....	65
Fig. 5.7 Cluster analysis results with four clusters (user characteristics).....	68
Fig. B.1. Ring back tone .....	85
Fig. B.2. Mobile games.....	85
Fig. B.3. Information-based services .....	85
Fig. B.4. Location based services .....	86
Fig. B.5. Short messaging service .....	86
Fig. B.6. Mobile marketing services.....	86
Fig. C.1 Expert focus group study – question1 .....	87
Fig. C.2 Expert focus group study – question2 .....	88
Fig. D.1 Experimental study – main screen-I.....	94
Fig. D.2 Experimental study – main screen - II .....	95
Fig. D.3 Experimental study – main screen - III .....	96
Fig. D.4 Experimental study – scenario-A’s screen shot.....	99
Fig. D.5 Experimental study – scenario-B’s screen-shot.....	99
Fig. D.6 Experimental study – scenario-C’s screen-shot.....	100
Fig. D.7 Experimental study – Scenario-D’s screen-shot.....	100
Fig. D.8 Experimental study – scenario-E’s screen shot .....	101
Fig. D.9 Experimental study – scenario-F’s screen shot .....	101
Fig. D.10 Experimental study – scenario-G’s screen shot.....	102
Fig. D.11 Experimental study – scenario-H’s screen shot.....	102
Fig. E.1 Cluster Analysis with 2 clusters (service attributes) .....	103
Fig. E.2 Cluster analysis with 3 clusters (service attributes) .....	104
Fig. E.3 Cluster analysis with 2 clusters (user characteristics) .....	105
Fig. E.4 Cluster analysis with 3 clusters (user characteristics) .....	106

## TABLES

Table 3.1 Mobile Service Conjoint Framework Hypotheses .....	26
Table 3.2 Attribute Levels.....	26
Table 3.3 Determinants of Mobile Service Intention Framework.....	29
Table 3.4 Mobile Service Intention Framework – Construct References.....	30
Table 4.1 History of Research Studies.....	36
Table 4.2 Attribute Levels.....	41
Table 4.3 Conjoint Alternatives Generated by SPSS .....	42
Table 4.4 First Set of Items .....	44
Table 4.5 Second Set of Items .....	44
Table 5.1 Weights of Mobile Service Adoption Taxonomy Aspects.....	48
Table 5.2 Weights of Mobile Service Adoption Taxonomy’s Categories.....	48
Table 5.3 Examples about Mobile Service Use Factors .....	50
Table 5.4 Profile of Respondents .....	52
Table 5.5 Gender-Mobile Service Experience Crosstab Analysis .....	52
Table 5.6 Age - Mobile Service Experience Crosstab Analysis .....	53
Table 5.7 Results of ANOVA for Age.....	53
Table 5.8 Results of ANOVA for Mobile Service Experience .....	54
Table 5.9 Results of ANOVA for Gender.....	54
Table 5.10 Summary of Reliability Analysis .....	55
Table 5.11 Descriptive Statistics .....	55
Table 5.12 Average Importance Score of Attributes .....	57
Table 5.13 Utility Scores.....	57
Table 5.14 Correlation Coefficients .....	58
Table 5.15 Subject – II’s Average Importance Score.....	59
Table 5.16 Alternatives and Market Shares .....	60
Table 5.17 Attribute Levels of Alternative 4 .....	61
Table 5.18 Attribute Levels of Alternative 3 .....	61
Table 5.19 Attribute Levels of Alternative 8 .....	61
Table 5.20 Number of Cases in Clusters.....	65
Table 5.21 Results of Cluster Analysis with Four Clusters (Service Attributes).....	66
Table 5.22 Results of ANOVA for Clusters (Service Attributes) .....	66
Table 5.23 Number of Cases in Clusters.....	67
Table 5.24 Results of Cluster Analysis with Four Clusters (User Characteristics)....	68
Table 5.25 Results of ANOVA for Clusters (User Characteristics).....	69
Table 6.1 The Most Preferred Alternatives.....	71
Table D.1 Questionnaire in English.....	91
Table D.2 Questionnaire (Turkish).....	92
Table D.3 Steps of Alternatives.....	97
Table E.1 Results of Cluster with 2 Samples (Service Attributes).....	103
Table E.2 Number of Cases in Clusters (Service Attributes).....	103
Table E.3 Results of Cluster Analysis (Service Attributes).....	104
Table E.4 Number of Cases in Clusters (Service Attributes).....	104
Table E.5 Results of Cluster Analysis (User Characteristics).....	105
Table E.6 Number of Cases in Clusters (User Characteristics) .....	105
Table E.7 Results of Cluster Anlaysia (User Characteristics).....	106



Table E.8 Number of Cases in Clusters (User Characteristics) .....	106
Table F.1 Model Summary of Regression 1 .....	107
Table F.2 ANOVA Analysis of Regression 1 .....	107
Table F.3 Coefficient Analysis of Regression 1.....	107
Table F.4 Model Summary of Regression 2 .....	108
Table F.5 ANOVA Analysis of Regression 2 .....	108
Table F.6 Coefficient Analysis of Regression 2.....	108
Table F.7 Model Summary of Regression 3 .....	109
Table F.8 ANOVA Analysis of Regression 3 .....	109
Table F.9 Coefficient Analysis of Regression 3.....	110
Table F.10 Model Summary of Regression 4 .....	110
Table F.11 ANOVA Analysis of Regression 4 .....	110
Table F.12 Coefficient Analysis of Regression 4.....	110

## PREFACE

This study addresses simple but powerful frameworks for adoption factors of mobile services. The frameworks synthesize, refine, and extend current approaches to understand adoption factors.

Nowadays, mobile technologies are gaining more popularity and diffusing into every aspect of our life. Especially, value added services (VAS) has a huge impact on consumers' daily life and has become a significant differentiator across the operators. Due to the significance and great impact of value added services on telecommunication sector, understanding users' needs is a very critical and necessary task. Additionally, better services will be best developed by understanding the requirements and needs of the users. In this study, our intention is to shed some light on the process of mobile service adoption by investigating and understanding factors affecting the users' preference and intention.

The study is composed of six chapters. In Chapter 1, the study and its relevance are presented with industry and literature facts. Chapter 2 is the literature review part which provides a conceptual background including a brief review of the literature about mobile technologies, value added services, the acceptance models, diffusion of innovations, adoption research models and conjoint analysis. In Chapter 3, research frameworks are presented, and afterwards research methodology is discussed in Chapter 4. The findings, implications and limitations of the study are presented and discussed in Chapter 5. The study ends with a conclusion chapter which summarizes goals, results, methods, and recommendations of the study.

In spite of some limitations like sample size and literature insufficiency, it is considered that findings of this study will contribute to mobile service adoption literature. In addition to this, it will provide insights to mobile service design and development managers during service design and requirement phases in the telecommunication sector. Value added services' marketing experts will also gain some additional insights about users' behaviors, needs and preferences. They may use them in their marketing activities accordingly. For example, they may focus on word of mouth activities. According the results, internal influence such as peer influence has an impact on user attitude toward using services. Many other insights may be found in the study.

## CHAPTER 1

### INTRODUCTION

The Mobile Industry is no longer just about the delivery of voice over phones. The future of mobile sector is expected to rely on mobile services (Carlsson et al, 2006) due to saturation in voice. Therefore, operators try to find new and alternative sources of revenue. Introduction of new content services such as logo-melody or RBT (Ring Back Tone), and voting-contest services, data services, messaging services, java games, mobile-TV and video downloading make the mobile industry more dynamic and promising. Non-voice now represents between 15% and 29% of operator service revenue, depending on the market. Of that, mobile Internet downloads and data now contribute a very respectable 3% to 17% of total service revenue (Cellular-News, 2007). To respond to declining average revenue per user (ARPU) in telecommunication markets, mobile data services are seen as remediation (Knutsen et al., 2005). Bouwman et al. (2006) also underline the importance of mobile services that the future of telecommunication sector will be depending on mobile internet services development in addition to voice services (Bouwman et al., 2006). The adoption of new mobile services disclaims this proposition as it has been much slower than expected, especially in Europe (Carlsson et al, 2006). However, basic services evolved rapidly. A good example is SMS (Short Message Service), which became surprisingly popular after 1995 as users began sending messages to each other. Initially, it was introduced as an information service from operators to users. However, SMS became a greatly profitable business only when it became possible to send messages (peer to peer messaging), which changed the

communication world for users and contributed to creating a European mobile culture (Kaseniemi, 2003). SMS provides mobile data functionality and have been popular for social communication (Middleton, 2006). Messaging services allow either the exchange of text messages or multimedia messages. However, the success of SMS can not be compared with MMS (Multimedia Messaging Service). MMS does not have a huge impact on total messaging market revenue. This may be the result of acquired habits which have a strong effect on the choice of messaging (Bouwman et al., 2006). The transition from text to multimedia is an important change. Rau et al. (2006) say that this transition phase is similar to transition from DOS to Windows in PCs (Rau et al., 2006)

Although some mobile services such as SMS, ring tones, icons and logos have either been adopted on a large scale or have at least been tried by a majority of users (Carlsson et al, 2005), but more advanced services like location based services have not yet found their ways into the everyday lives of consumers. This basic challenge is to understand how and why people adopt or do not adopt mobile services (Carlsson et al., 2006). Gilbert et al. also tried to understand the adoption of mobile data services (MDS). According to Gilbert's study, decisions to use new services are innovation behaviors that change according to the needs and perceptions of individual adopters. It also suggests to segment markets for MDS by combining demographic and psychographic data (Gilbert et al, 2004).

Hsu et al. (2006) made a study about the adoption factors of MMS (Multimedia Message Service). MMS allows more multimedia communication with entertainment effects (exchange pictures, sound clips, voice recording or animated pictures) than text-based short message service (Hsu et al, 2006). In the study, it was seen that there

is a significant difference between potential adopters and users. Apart from these studies, many other causes have been proposed for the adoption factors.

The reason to have a low level of demand and a slow diffusion may be user resistance, reliability concerns, price, social effects, or technical problems. On the other hand, some of the enablers of mobile services are improvements in network bandwidth and quality, ease of use, device or handset improvements, content richness or customer experiences which may lead to the development of new mobile services. The purpose of this study is to better understand the adoption factors of mobile services in general. The literature review section provides a conceptual background including a brief review of the literature about mobile technologies, value added services, the acceptance models, diffusion of innovations, adoption research models and conjoint analysis. In the third section, the frameworks and related hypotheses are presented. The fourth section discusses the research methodology and data collection process deeply. In the findings section, interviews, brainstorming, expert focus group and experimental study results are explained. In the final section, conclusions and implications are presented.

## CHAPTER 2

### LITERATURE REVIEW

Mobile service adoption can be attributed to several effective factors: personal, social or level of technology. Before exploring the mobile service adoption factors, foundation of theories and previous studies on technology adoption has been explored. A number of theories have been developed to help explain the concept of technology adoption (Mennecke and Strader, 2003; Kleijnen and de Ruyter, 2003). In summary, theoretical models that aim to clarify the relationship between consumer attitudes, intentions, and actual use include the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980), the Theory of Planned Behavior (TPB) (Ajzen, 1991), Innovation Diffusion Theory (Agarwal & Prasad, 1997, 1998; Moore & Benbasat, 1991; Rogers, 1993), the Technology Acceptance Model (TAM) (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989) and Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, 2003).

#### Diffusion of Innovations

Diffusion of innovation theory sees innovations as being communicated through certain channels over time and within a particular social system (Rogers, 1995). Individuals are seen as possessing different degrees of willingness to adopt innovations, and thus it is generally observed that the portion of the population adopting an innovation is approximately normally distributed over time (Rogers, 1995). Breaking this normal distribution into segments leads to the segregation of

individuals into the following five categories of individual innovativeness (from the earliest to the latest adopters): innovators, early adopters, early majority, late majority, laggards (Rogers, 1995). Members of each category typically possess certain distinguishing characteristics as shown below:

- innovators - venturesome, educated, multiple info sources
- early adopters - social leaders, popular, educated
- early majority - deliberate, many informal social contacts
- late majority - skeptical, traditional, lower socio-economic status
- laggards - neighbors and friends are main info sources, fear of debt

When the adoption curve is converted to a cumulative percent curve, a characteristic S curve (as shown in Figure 2.1) is generated that represents the rate of adoption of the innovation within the population (Rogers, 1995).

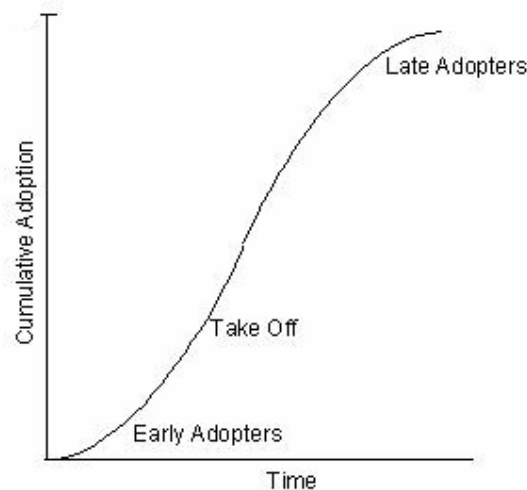


Fig. 2.1 Diffusion process (Rogers, 1995)

The rate of adoption of innovations is affected by five factors: relative advantage, compatibility, trialability, observability, and complexity (Rogers, 1995).

The first four factors are generally positively correlated with the rate of adoption



while the last factor, complexity is generally negatively correlated with the rate of adoption (Rogers, 1995). The actual rate of adoption is governed by both the rate at which an innovation takes off and the rate of later growth. Low cost innovations may have a rapid take-off while innovations whose value increases with widespread adoption (network effects) may have a faster late stage growth. However, innovation adoption rates can be influenced by other phenomena. For instance, the adaptation of technology to individual needs can change the nature of the innovation over time. In addition, a new innovation can affect the adoption rate of an existing innovation, and path dependence may lock potentially inferior technologies in place.

#### Theory of Reasoned Action (TRA)

The theory of reasoned action (TRA) was developed by Martin Fishbein & Icek Ajzen (1975). TRA is used to explain behavior beyond the adoption of technology. The TRA model includes four general concepts: behavioral attitudes, subjective norm, intention to use and actual use. The theory of reasoned action says that people's intentions are the best guide to behavior. If a person intends to do a behavior then it is likely that the person will do it. Furthermore, person's intentions are themselves guided by two things. First is the person's attitude towards the behavior and second is the subjective norm.

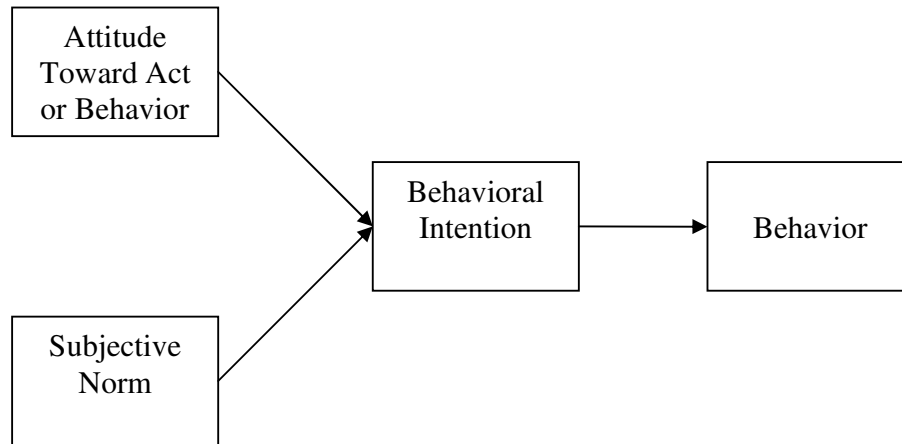


Fig. 2.2 Theory of reasoned action (Fishbein & Ajzen, 1975)

The model has some limitations including a significant risk of confounding between attitudes and norms since attitudes can often be reframed as norms and vice versa. A second limitation is the assumption that when someone forms an intention to act, they will be free to act without limitation. In practice, constraints such as limited ability, time, environmental or organizational limits, and unconscious habits will limit the freedom to act. The theory of planned behavior (TPB) attempts to resolve this limitation.

### Theory of Planned Behavior (TBP)

Theory of planned behavior (TBP) claims that individual behavior is driven by behavioral intentions. These behavioral intentions are a function of an individual's attitude toward the behavior, the subjective norms surrounding the performance of the behavior, and the individual's perception of the ease with which the behavior can be performed. It was outlined by Icek Ajzen in 1991 as an extension of the theory of reasoned action in that it identifies the importance of assessing the amount of control

an individual has over behaviors and attitudes (perceived behavioral control). The TPB takes into account that all behavior is not under volitional control and that behaviors are located at some point along a continuum that extends from total control to a complete lack of control. Control factors include both internal factors (such as skills, abilities, information, and emotions) and external factors (such as situation or environmental factors). TPB extended TRA by adding the construct of perceived behavioral control. A related model is the decomposed theory of planned behavior (DTPB). In terms of predicting intention, DTPB is identical to TPB. In contrast to TPB but similar to TAM (Technology Acceptance Model), DTPB “decomposes” attitude, subjective norm, and perceived behavioral control into its underlying belief structure within technology adoption contexts.

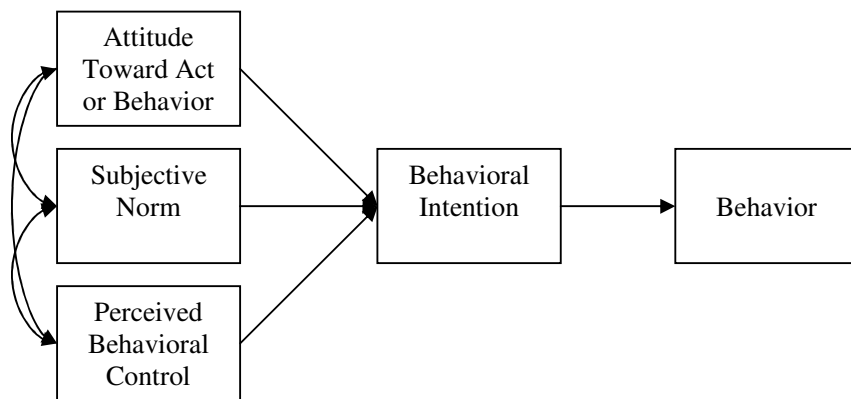


Fig. 2.3 Theory of planned behavior (Ajzen, 1991)

### Technology Acceptance Model (TAM) & TAM2

One of the widely accepted and applied models is the Technology Acceptance Model (Davis, 1989) which is one of the most influential extensions of Ajzen and Fishbein’s theory of reasoned action (TRA) in the literature. The technology acceptance model (TAM) has been extensively used to understand technology

adoption. Firstly, TAM was proposed by Davis in 1986 in his doctoral thesis. Then, it had been tested and extended by many researchers. Davis (1989) and Davis et al. (1989) proposed TAM to address why users accept or reject information technology. TAM focuses on two particular constructs of perceived usefulness and perceived ease of use as drivers of technology acceptance. Perceived ease of use and perceived usefulness predicts attitude toward use of a technology. Then, attitude toward use predicts the behavioral intention to use. Finally, intention predicts the actual use of that technology (Davis, 1989). In summary, it includes five concepts: ease of use, usefulness, attitudes towards use, intention to use and actual use. Davis's original TAM is shown in Figure 2.4.

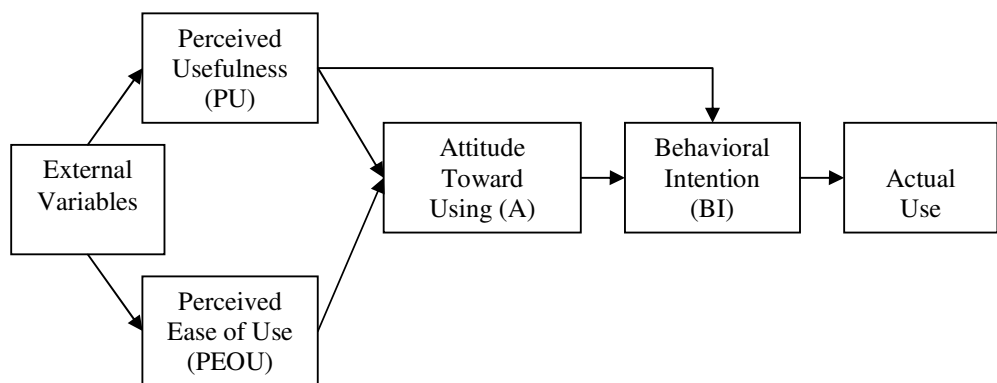


Fig. 2.4 Original version of TAM (Davis, 1989)

The model of TAM is a very useful theoretical model that has been tested in many empirical studies. The results and constructs of TAM are utilized in many studies. Especially, the study of Legris et al. (2003) summarizes and compares the findings of research done with TAM (Legris et al., 2003). Lederer et al. investigated TAM for work-related tasks involving the web. Their findings provided support for

TAM and also corroborated that usefulness has a stronger effect than ease of use (Lederer et al., 2000). In addition to this, some studies have shown that the perceived ease of use has little influence on acceptance. Sometimes, the influence could not even be proved. It is argued that it depends on the kind of task as to whether this influential factor is important for acceptance or not (Neudorfer, 2004). Furthermore, Venkatesh and Morris (2000) extended the original TAM model to explain perceived usefulness and usage intentions in terms of social influence and cognitive instrumental processes. The extended model, referred to as TAM2, was tested in both voluntary and mandatory settings. The results strongly supported TAM2 (Venkatesh & Morris, 2000).

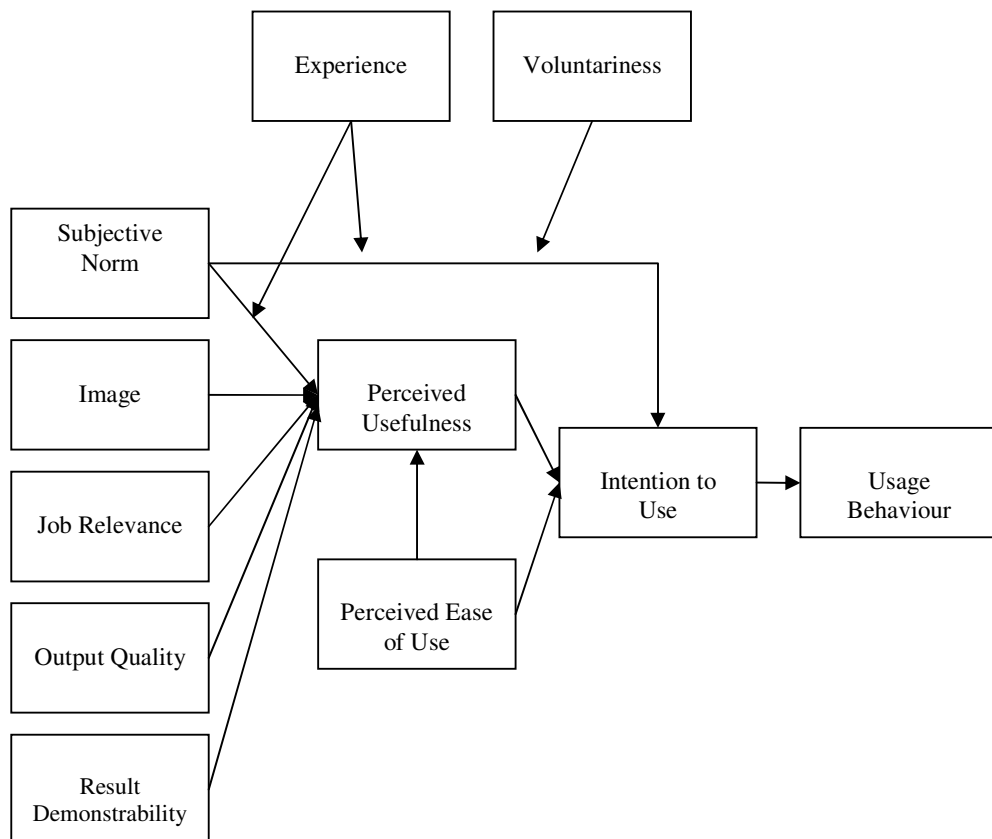


Fig. 2.5 Original version of TAM2 (Venkatesh & Morris, 2000)

## Unified Theory of Acceptance and Use of Technology (UTAUT)

The UTAUT aims to explain user intentions to use an information system and subsequent usage behavior. The theory holds that four key constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) are direct determinants of usage intention and behavior (Venkatesh et. al., 2003) (see Fig. 2.6). Gender, age, experience, and voluntariness of use are posited to mediate the impact of the four key constructs on usage intention and behavior (Venkatesh et. al., 2003). The theory was developed through a review and consolidation of the constructs of eight models that earlier research had employed to explain IS usage behavior (theory of reasoned action, technology acceptance model, motivational model, theory of planned behavior, a combined theory of planned behavior/technology acceptance model, model of PC utilization, innovation diffusion theory, and social cognitive theory). Subsequent validation of UTAUT in a longitudinal study found it to account for 70% of the variance in usage intention (Venkatesh et. al., 2003).

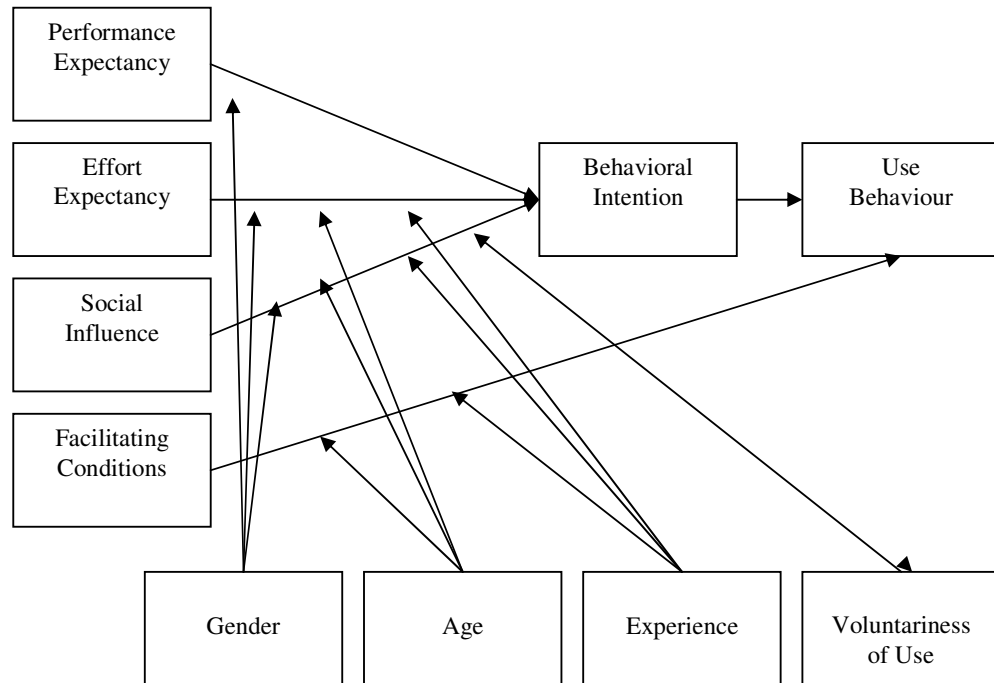


Fig. 2.6 UTAUT (Venkatesh, 2003)

## Conjoint Analysis

Conjoint analysis has become one of the most widely used quantitative tools in marketing research. It is a statistical technique used in market research to determine how people value different features that make up an individual product or service. When used properly, it provides reliable and useful results (Orme, 2003). It is the ideal tool for new/improved product development or design. It is often difficult to accurately determine the relative importance of certain attributes belonging to a product or service. For instance, when asked which attributes are the most important ones, responses may indicate that they all are important. In addition, individual attributes are perceived differently than when combined in a product or service. A better way of measuring the attribute's contribution is to present combinations of them as concepts, visualized as different products or services.

The conjoint analysis task asks the respondents to make choices in the same fashion as consumers normally do, by trading off features one against the other, either by ranking or choosing one of several product combinations. The objective of conjoint analysis is to determine what combination of a limited number of attributes is most influential on respondent choice or decision making. A controlled set of potential products or services is shown to respondents and by analyzing how they make preferences between these products, the implicit valuation of the individual elements making up the product or service can be determined. These implicit valuations can be used to create market models that estimate market share, revenue and even profitability of new designs (Green, 1978).

The types of Conjoint Analysis are as follows:

- Adaptive Conjoint Analysis (ACA)
- Traditional Full-Profile Conjoint Analysis (CVA)
- Choice-based Conjoint (CBC)

The name "Conjoint analysis" implies the study of the joint effects (Luce et al., 1964). Conjoint measurement (as distinguished from conjoint analysis) permits the use of rank or rating data when evaluating pairs of attributes or attribute profiles rather than single attributes.



### Steps in Conjoint Analysis

The tasks of the full profile analysis (Green & Srinivasan, 1978; Luce & Tukey, 1964) may be explained in six steps. These steps are:

1. The respondent is given a set of stimulus profiles (constructed along factorial design principles in the full profile case). In the two factor approach, pairs of factors are presented, each appearing approximately an equal number of times.
2. The respondents rank or rate the stimuli according to some overall criterion, such as preference, acceptability, or likelihood of purchase.
3. In the analysis of the data, part-worths are identified for the factor levels so that each specific combination of part-worths equals the total utility of any given profile. A set of part-worths are derived for each respondent.
4. The goodness-of-fit criterion relates the derived ranking or rating of stimulus profiles to the original ranking or rating data.
5. A set of objects are defined for the choice simulator. Based on previously determined part-worths for each respondent, each simulator computes a utility value for each of the objects defined as part of the simulation.
6. Choice simulator models are invoked which rely on decision rules (first choice model, average probability model, logic model) to estimate the respondent's object of choice. Overall choice shares are computed for the sample (Luce et al., 1964)

## Mobile Technologies

Consumers are adopting technologies and services that blur the boundaries between entertainment, information and communication (CBR Staff, 2007). The driving force for the adoption of technologies is determined by the level of consumer demand and acceptance of new services. Consumers will only use new technologies if they see value or are positively affected in some way by a service, whether that service is mobile broadcast TV, IPTV, chat & messaging, logo-melody, games, contest or online advertising (CBR Staff, 2007).

The first generation (1G) of mobile technologies was introduced in the late 1970s. It was primarily used for voice transfer. In the early 1990s, second generation (2G) systems came into existence and was further developed to 2.5G, which includes GSM (Global System for Mobile Communications), TDMA (Time Division Multiple Access) and CDMA (Code Division Multiple Access). The next generation of mobile communications is 3G and this delivers data speeds from 384 kbps to 2 Mbps and over wireless interfaces such as GSM, TDMA and CDMA. These were used for voice and data. The first generation of cellular service is generally considered to be the analog systems that operate on the Advanced Mobile Phone System (AMPS) standard. Digital systems that employ Time Division Multiple Access (TDMA) technology are generally considered second generation. TDMA networks have approximately three times the capacity of a similar AMPS network. Third generation cellular networks are also digital but use another access technology to allocate the available spectrum to end-users. With Code Division Multiple Access (CDMA) technology, all users can share the entire spectrum because each user's conversation is differentiated by a unique digital code. Because the entire spectrum can be re-used

by other users, CDMA networks have approximately 8 to 10 times the capacity of a similar AMPS network (eurotelgsm.com, 2007).

Global System for Mobile Communications (GSM) is vastly different from the above standards. GSM is a digital standard. From the consumer's point of view, this means less static, clearer reception and overall better audio quality. Additional services such as data transmission and short messaging service (SMS) can be offered on a GSM network (eurotelgsm.com, 2007)

### Global System for Mobile Communications (GSM)

GSM is an open, digital cellular technology used for transmitting mobile voice and data services (gsmworld.com, 2007). GSM differs from first generation wireless systems in that it uses digital technology and time division multiple access transmission methods. GSM operates in the 900MHz and 1.8GHz bands in Europe and the 1.9GHz and 850MHz bands in the US. GSM supports data transfer speeds of up to 9.6 Kbit/s, allowing the transmission of basic data services such as SMS (Short Message Service). Another major benefit is its international roaming capability, allowing users to access the same services when traveling abroad as at home. This gives consumers seamless and same number connectivity in more than 210 countries. GSM satellite roaming has also extended service access to areas where terrestrial coverage is not available (gsmworld.com, 2007).

### General Packet Radio Service (GPRS)

General Packet Radio Service (GPRS) is a 2.5 generation packet based network technology for GSM networks. GPRS is a connectivity solution based on internet protocols that supports a wide range of enterprise and consumer applications. It is an enhancement to GSM technology that integrates GSM and IP technology. It offers always-on, high speed connectivity to the Net. Thus, people can check their email on the move and surf the Web at high speeds. With throughput rates of up to 40 Kbit/s, users have a similar access speed to a dial-up modem, but with the convenience of being able to connect from anywhere. GPRS customers enjoy advanced, feature-rich data services such as color Internet browsing, e-mail on the move, and powerful visual communications such as video streaming, multimedia messages and location-based services. For operators, the adoption of GPRS is a fast and cost-effective strategy that not only supports the real first wave of mobile Internet services, but also represents a big step towards 3GSM (or wideband-CDMA) networks and services (MobileIN.com, 2007).

Using GPRS as a bearer for WAP will allow for the use of WAP on a per-transaction rather than a per-minute-of-use basis. A GPRS customer could receive content or services without actually manually invoking a service or transaction. This has significant implications for mobile commerce and location based services (MobileIN.com, 2007).

### Enhanced Data GSM Environment (EDGE)

The new EDGE (Enhanced Data GSM Environment) interface has been developed specifically to meet the bandwidth needs of 3G. It offers high-speed data transfers over GSM networks with just a software upgrade to the handset. EDGE allows speeds up to 384 kbps. EDGE provides up to three times the data capacity of GPRS. EDGE uses the same TDMA (Time Division Multiple Access) frame structure, logic channel and 200 kHz carrier bandwidth as today's GSM networks, which allows it to be overlaid directly onto an existing GSM network. For many existing GSM/GPRS networks, EDGE is a simple software-upgrade (gsacom.com, 2006).

EDGE allows the delivery of advanced mobile services such as the downloading of video and music clips, full multimedia messaging, high-speed color Internet access and e-mail on the move. Due to the very small incremental cost of including EDGE capability in GSM network deployment, virtually all new GSM infrastructure deployments are EDGE capable. The Global mobile Suppliers Association (GSA) states that there were 156 commercial GSM/EDGE networks in 92 countries, out of a total of 213 GSM/EDGE deployments in 118 countries (gsacom.com, 2006).

### Third Generation (3G)

3G is the latest addition to the GSM family. 3G enables the provision of mobile multimedia services such as music, mobile-TV and video, rich entertainment content and Internet access (MobileIN.com, 2007).

Third generation (3G) networks were conceived from the Universal Mobile Telecommunications Service (UMTS) concept for high speed networks for enabling a variety of data intensive applications. The major impetus for 3G is to provide faster data speed for data-intensive applications such as video. In addition, 3G to providing faster data speeds on a per-user basis; 3G is also helpful to provide greater overall capacity for voice and data users. The data speed of 3G is determined based on a combination of factors including the chip rate, channel structure, power control, and synchronization (MobileIN.com, 2007).

### Value Added Services (VAS)

While the number of mobile subscribers continue to surge, operators are in search of ways to increase average revenue per user(ARPU). In order to rapidly increase ARPU, operators must go beyond a traditional way of increasing usage of voice minutes via value added services that can provide an astonishing mobile experience (Unified Communications, 2007). Mobile value added services solutions enable operators to address subscribers' desire for personalisation, entertainment, info-communications and mobility by providing innovative and creative ways for them to express their individual identity.

GSM is fast becoming the preeminent way to deliver information, communication and entertainment services to people worldwide (GSMWorld, 2007).

Wireless services allow users anytime and anywhere use the internet via portable terminals (Kallio, 2004).

A value added service (VAS) is a telecommunications industry term for non-core services or all services beyond standard voice calls. On a conceptual level, value added services add value to the standard service offering, and allowing the operator to drive up their ARPU (Average Revenue per User). Value added services are the key to generate new revenues or to create differentiation in the market. For mobile phones, while technologies like SMS, MMS and GPRS are usually considered value-added services, a distinction may also be made between standard (peer-to-peer) content and premium-charged content (wikipedia.com, 2007).

There are two types of VAS:

The first service type is those value-added services that stand alone from an operational perspective. These types of services need not be coupled with other services. Many non-voice services fall into this category. They are often provided as an optional service along with voice services, but they could be offered and used by themselves without the voice service. For example, SMS could be offered and used as a service without voice calling (MobileIN.com, 2006).

The second type of VAS is those services that do not stand-alone. Instead, this category adds value to existing services. While it seems implicit in the definition of value-added, this is an important principle that makes value-added services stand apart from other services (MobileIN.com, 2006). There is evidence of significant change and a view that the market for non-voice services is poised for substantial growth.

From the launch of traditional voice services in the early 1990s, the GSM family of technologies has become increasingly sophisticated and GSM networks

now offer a wealth of mobile data and entertainment services. The growth of SMS (Short Messaging Service) continues with an estimated one trillion messages sent globally in 2005. More advanced messaging services such as MMS (Multimedia Messaging Service) and IM (Instant Messaging) offer users an even richer mobile messaging experience. Mobile communications also has the opportunity to become the new personal entertainment and information medium of choice. Such services include advanced mobile gaming applications, mobile music, and mobile TV and video content. For users, the mobile phone offers convenience, immediacy and personalization. Such benefits have fostered the growth of location-based services and mobile commerce applications. Meanwhile users are also able to enjoy the experience of accessing Internet-style services on hundreds of thousands of WAP sites that contain much of the information and images found on the wider Internet (GSMWorld, 2007).



## CHAPTER 3

### FRAMEWORK

This chapter describes the definition and significance of the study, taxonomy, research framework and the research hypotheses developed in this study.

In the research, the connection between experience, innovativeness, mobility, internal influences, external influences, usefulness, image, cost, enjoyment, content, service speed, personalization, visual factors, satisfaction, EoU, attitude and intention is examined and hypotheses are built up accordingly.

In addition to these, conjoint analysis was done by using attributes of service speed, content, screen size, cost and personalization to find preference factors of mobile services.

#### Definition & Significance of the Study

The Mobile Industry is one of the most dynamic and growing industry in the world, and it is no longer just about the delivery of voice over phones. It is expected to rely on mobile services or value added services (Carlsson et al, 2005). In addition to this, average revenue per user for voice has been saturated in most of the markets. Due to the saturation in voice, mobile services were very promising, and they were seen as remedies. Although some basic services such as SMS have been adopted by majority of users, more advanced services have not been adopted in this manner.

The present study focuses on the adoption factors of mobile services, and aims to discover the user intention factors and service design factors separately. For this

purpose, two integrated frameworks were constructed. The frameworks synthesize, refine and extend current approaches to understand the service design factors and user intention factors.

### Research Taxonomy

Figure 3.1 illustrates the related taxonomy for mobile service adoption. In the construction of taxonomy, many studies have been conducted. These are literature survey, interviews, brainstorming sessions, focus group studies and an experimental study which includes conjoint analysis and a questionnaire.

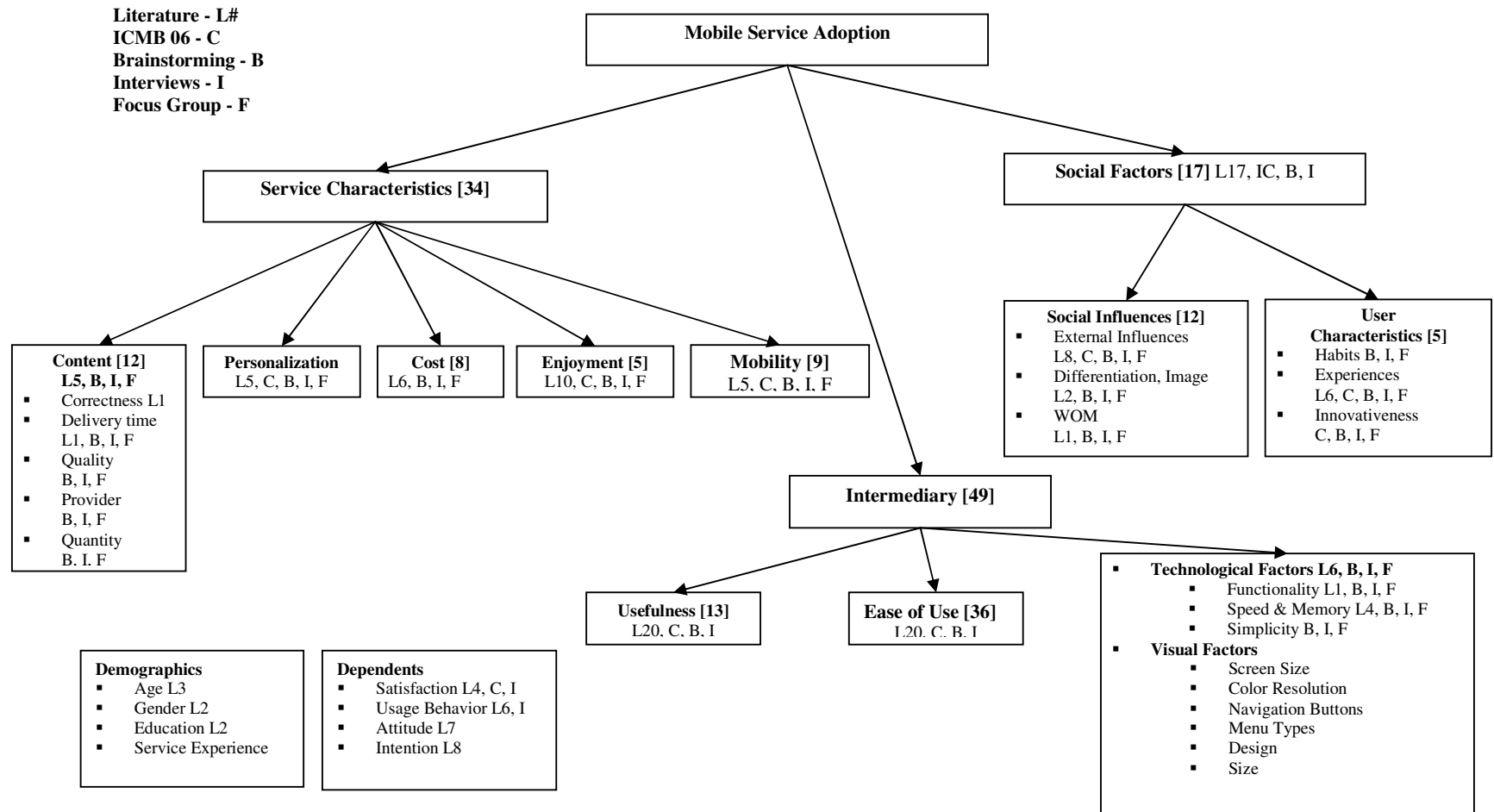


Fig. 3.1 Proposed mobile service adoption taxonomy

## Research Frameworks and Hypotheses

The models were constructed based on taxonomy and the models that are discussed in Chapter 2. Fig. 3.2 and Fig. 3.3 represent integrated research frameworks that aim to provide a direction in reaching the research objectives. One of the frameworks aimed to find the factors affecting the mobile service preference of users and the other one aimed to test the intention of users about mobile service use.

### Mobile Service Conjoint Framework

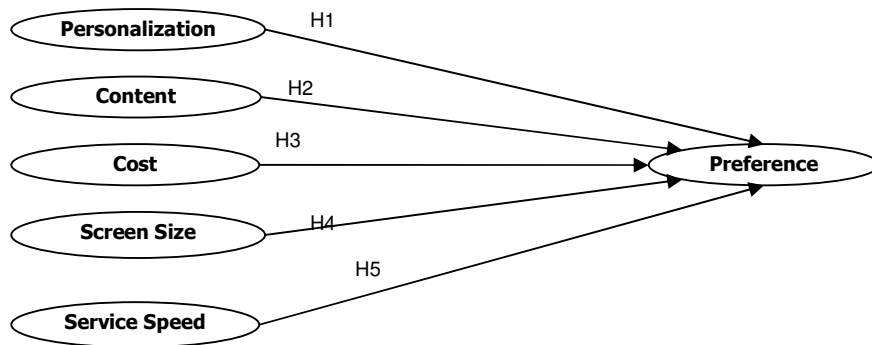


Fig. 3.2 Mobile service conjoint framework

Research hypotheses for conjoint constructs drawn from the research frameworks have been summarized in the following table (Table 3.1). These factors may positively or negatively influence user's adoption of mobile services. The main goal of this conjoint analysis is to identify a hierarchy of importance of the critical factors influencing the adoption of mobile services.

Table 3.1 Mobile Service Conjoint Framework Hypotheses

Hypotheses	Dependent Variable	Independent Variable	Relationship
H <sub>1</sub>	Preference	Personalization	Positive
H <sub>2</sub>		Content	Positive
H <sub>3</sub>		Cost	Negative
H <sub>4</sub>		Screen Size	Positive
H <sub>5</sub>		Service Speed	Positive

During conjoint analysis, a mobile pharmacy service was described in terms of a number of attributes. Mobile pharmacy service provides the nearest pharmacies' information depending on the user's current location. To use this service, the user sends a message from his/her phone by writing "PHARMACY" to the short number of 1111. This mobile service is described in terms of personalization, content, cost, screen size and service speed. Then, each attribute was broken down into a number of levels:

Table 3.2 Attribute Levels

Attribute	Levels
Personalization	Exist – Not Exist
Content	SMS - Detailed SMS - MMS
Cost	Inexpensive (0.25 YTL) - Expensive (1 YTL)
Screen Size	Large – Small (176x208 pixels / 96x68 pixels )
Service Speed	Fast (1 minute) – Slow (8 minutes)

The hypotheses are explained separately and the relationships between the research constructs for each hypothesis have been indicated in the following pages.

H1: Personalization significantly and positively influences the preference of the mobile service user.

Personalization may be defined as a powerful tool that enables consumers to select the content, presentation and functionality of the service according to their unique needs and preferences. According to the needs of consumers, personalization seems to be a desired feature. This is also mentioned by Carlsson et al. (2006) such

that dimensions of communication which involve personalization predict the use of some mobile services. The effect of personalization on preference was investigated by Kargin & Basoglu in 2006. One of their significant findings is that personalization has a direct impact on usefulness and an indirect impact on attitude via usefulness. Making it unique to the individual in various ways is an important part of any service. Consumers should feel services are unique to them.

H2: Content of services significantly and positively influences the preference of the mobile service user.

Content is a major factor for the performance of such services. Content correctness, content delivery time, content quality, content quantity, and content provider are the ingredients of content. In literature, Gilbert et al. also (2005) focus on importance of the content aspect of services. According to their findings, one key barrier to attracting a critical mass of adopters is the lack of compelling content (Gilbert et al., 2005).

H3: Cost significantly and negatively influences the preference of the mobile service user.

Cost is another aspect of mobile services which can be compared with the value of services. Users compare costs and benefits of services and try to find a relative advantage over other services. Service costs are also researched by Carlsson et al. (2005). They found that financial costs are significant barriers to the use of mobile services (Carlsson et al, 2005).

H4: Screen size of mobile terminal positively and significantly influences the preference of the mobile service user.

In conjoint test, different screen sizes are offered in different scenarios. Two types of screen size are offered: Handsets with large and small size screens (large:

176x208 pixels - small: 96x68 pixels). In 2003, Yamakawa & Matsumoto emphasized handset features during adoption of mobile internet services. They called this construct “size and form factors” in their integrating framework. They called these type factors as facilitating conditions for the demand side (Yamakawa & Matsumoto, 2003).

H5: Service speed positively and significantly influences the preference of the mobile services user.

In 2004, Pagani used speed of use as a construct in her model (Pagani, 2004). According to the result of the study, speed of use is the most important determinant of adoption of multimedia mobile services. Results also showed that speed of use is more appreciated by young people. In addition to Pagani, Hung et al. (2003) revealed that connection speed influences attitude formation towards WAP usage (Hung et al., 2003).

#### Determinants of Mobile Service Intention Framework

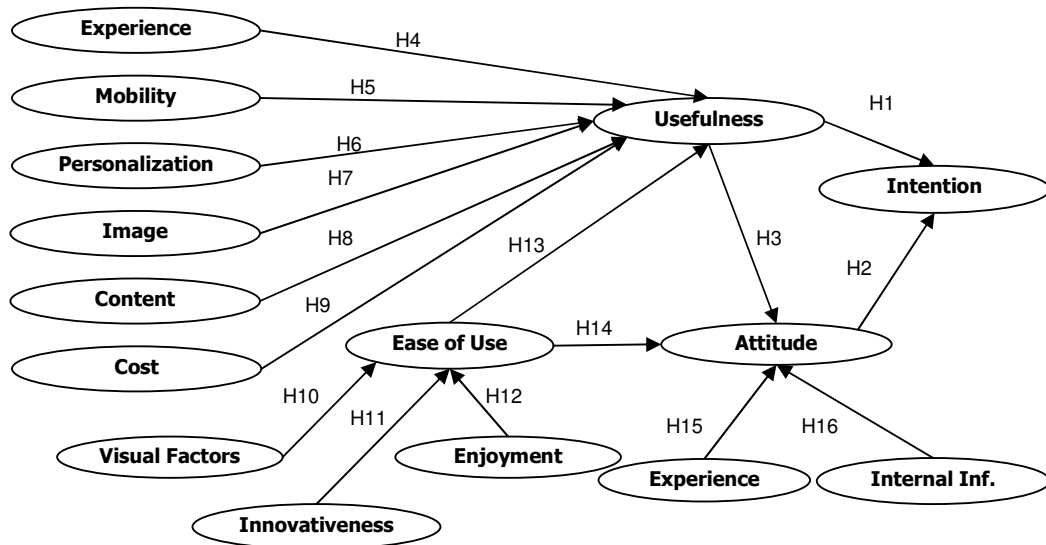


Fig. 3.3 Determinants of mobile service intention framework

Research hypotheses for the survey constructs drawn from the “Determinants of Mobile Service Intention Framework” have been summarized in the following table (Table 3.3). Additionally, in Table 3.4, the references of constructs may be seen.

Table 3.3 Determinants of Mobile Service Intention Framework

Hypotheses	Dependent Variable	Independent Variable	Relationship
H <sub>1</sub>	Intention	Usefulness	Positive
H <sub>2</sub>		Attitude	Positive
H <sub>3</sub>	Attitude	Usefulness	Positive
H <sub>4</sub>	Usefulness	Experience	Positive
H <sub>5</sub>		Mobility	Positive
H <sub>6</sub>		Personalization	Positive
H <sub>7</sub>		Image	Positive
H <sub>8</sub>		Content	Positive
H <sub>9</sub>	Ease of Use	Cost	Negative
H <sub>10</sub>		Visual Factors	Positive
H <sub>11</sub>		Innovativeness	Positive
H <sub>12</sub>		Enjoyment	Positive
H <sub>13</sub>	Usefulness	Ease of Use	Positive
H <sub>14</sub>	Attitude	Ease of Use	Positive
H <sub>15</sub>		Experience	Positive
H <sub>16</sub>		Internal Influence	Positive



Table 3.4 Mobile Service Intention Framework – Construct References

Hypothesis	Description	Construct References
H1	Usefulness significantly and positively influences user intention	Davis, 1989; Rogers, 1993
H2	Attitude significantly and positively influences user intention	Davis, 1989; Rogers, 1993
H3	Usefulness significantly and positively influences user attitude	Davis, 1989; Rogers, 1993
H4	User experience significantly and positively affect usefulness	Pedersen et al., 2004
H5	Mobility significantly and positively influences usefulness	May, P., 2001; Kleinrock, L, 1996
H6	Personalization significantly and positively influence usefulness	Carlsson et al., 2006
H7	Image positively and significantly affects usefulness.	Hong et al., 2006
H8	Content of services significantly and positively influences usefulness	Gilbert et al., 2005
H9	Cost significantly and negatively influences usefulness.	Carlsson et al., 2005
H10	Visual factors significantly and positively influence EoU	Tsuja & Matsumoto, 2003
H11	Innovativeness significantly and positively influence EoU	Rogers, 1993; Hung et al., 2003
H12	Enjoyment significantly and positively influences EoU	Zhu & Fui-Hoon, 2002; Bouwman et al., 2006; Davis et al. (1992); Thong et al., 2006
H13	Ease of use significantly and positively influences usefulness	Davis, 1989; Davis et al., 1989
H14	Ease of use significantly and positively influence attitude.	Davis, 1989
H15	User experience significantly and positively influences attitude	Pedersen et al., 2004
H16	Internal Influence significantly influences attitude	Reichheld & Teal, 1996; Teo et al., 2003

The first two hypotheses of this study are as follows:

H1: Usefulness significantly and positively influences user intention to use mobile services.

H2: Attitude significantly and positively influences user intention to use mobile services.

Davis's (1989) usefulness is similar to Rogers's (1993) relative advantage factor which influence attitude to use and hence satisfaction. Relative advantage means the degree to which an innovation is perceived as better than the idea it supersedes. Attitude toward use predicts the behavioral intention to use. Finally, intention predicts the actual use of that technology (Davis, 1989). Depending on Davis's (1989) and Rogers's (1993) models the following inference is made:

H3: Usefulness significantly and positively influences attitude.

H4: Experience significantly and positively influences usefulness.

Pedersen et al. (2004) state that "Attitudes may well have been developed towards a service, but attitudinal influence seemed to require user experience". The experienced users can compare services with other services' usage and they can understand the benefits of similar services easily. Their attitude may be affected indirectly via usefulness.

H5: Mobility significantly and positively influences usefulness.

To have access to real time information and communications (i.e. need for work, emergency, communication, and contact), mobility is significant. Mobile computing provides users more freedom, as they can access information and services without having to find a physical place, such as an office or an Internet cafe (May, 2001). Kleinrock (1996) also explained the benefits provided by mobile technologies as "anytime and anywhere computing", and outlined the two most common dimensions of mobility as independence of time and place (Kleinrock, 1996). In addition to these findings, Mallat et al. (2006) used mobility construct in their research model.

H6: Personalization significantly and positively influences usefulness.

Personalization may be defined as a powerful tool that enables consumers to select the content, presentation and functionality of the service according to their unique needs and preferences. According to needs of consumers, personalization seems to be a desired feature. This is also mentioned by Carlsson et al. (2006) such that dimensions of communication which involve personalization predict the use of some mobile service.

H7: Image significantly and positively influences usefulness.

The study of Hong et al. (2006) is exploring the service usage behavior. According to the findings, uniqueness motivation is an important factor in service adoption. Users feel unique and recognizable in public with services and provide a distinctive image (Hong et al., 2006). In addition to these, high tech handset owners, who use only voice and SMS capabilities of their handsets, try to obtain a distinctive image by obtaining advanced high phones. This is another important research area.

Content and content providers are also major factors for the performance of such services. Especially, quality, correctness and delivery time of content of services are critical. In literature, Gilbert et al. also (2005) focuses on the importance of content aspect of services. According to their findings, one key barrier to attracting a critical mass of adopters is the lack of compelling content (Gilbert et al., 2005). Thus, the following hypothesis has been constructed:

H8: Content significantly and positively influences usefulness.

H9: Cost significantly and negatively influences usefulness.

Cost is another aspect of mobile services which can be compared with the value of services. Users compare costs and benefits of services and try to find a relative advantage over other services. Service costs are also researched by Carlsson

et al. (2005). They found that financial costs are significant barriers to the use of mobile services (Carlsson et al, 2005).

H10: Visual factors significantly and positively influence ease of use.

The screen size, color resolution, navigation buttons, buttons of cellular phones are examples of visual factors. We think that these factors are significant in service usage. Yamakawa & Matsumoto emphasized handset features during the adoption of mobile internet services. They called this construct as “size and form factors” in their integrating framework. They called these types of factors facilitating conditions for the demand side (Tsuja & Matsumuto, 2003).

H11: Innovativeness significantly and positively influences ease of use.

Innovativeness is defined as the extent to which an individual is early in adopting new ideas relative to other members of a society (Rogers, 1993). Hung et al. (2003) also used the construct of innovativeness in their research model as personal innovativeness. According to results, users who adopt an innovation earlier than others have higher levels of personal innovativeness than others who do not (Hung et al., 2003).

H12: Enjoyment significantly and positively influences ease of use.

We expect enjoyment to be more relevant when explaining ease of use. Zhu & Fui-Hoon (2002) identified enjoyment as an important construct that will affect users' intention to use a mobile device. Bouwman et al. (2006) also underlined the significance of perceived entertainment. In the study, they found that perceived entertainment plays an important role in the future use of services. Davis et al. (1992) defined perceived enjoyment as the extent to which the activity of using the information technology is perceived to be enjoyable in its own right; different from any performance results that may be anticipated (Davis et al., 1992).

H13: Ease of use significantly and positively influences usefulness.

Perceived ease of use is defined as “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1989). Davis and his colleagues (Davis, 1989; Davis et al., 1989) demonstrated that perceived ease of use affects perceived usefulness.

H14: Ease of use significantly and positively influences attitude toward using mobile services.

Perceived usefulness and perceived ease of use, the two constructs of Davis, are the drivers of technology acceptance. Perceived ease of use and perceived usefulness predicts attitude toward use of an innovative technology (Davis, 1989).

H15: Experience significantly and positively influences attitude toward using mobile services.

Experience may directly affect consumer attitude in addition to its impact on usefulness. If users have experience about similar services, they may have positive attitude due to their previous knowledge. Because they know about the benefits of services, their attitudes will be easily shaped.

H16: Internal influence significantly and positively influences attitude toward using mobile services.

The influence of close friends may be a significant factor in service usage. Especially word of mouth is a significant marketing concept. It is believed that this form of communication has valuable source credibility. According to studies, loyal customers tend to spend more and bring a steady stream of future customers by spreading positive word of mouth (Reichheld & Teal, 1996). Consumers may consult their close friends about service usage. Especially when individuals have no or little experience on the related innovation, they will be affected by the opinions of

reference groups (Teo & Pok, 2003). Peer influence plays a greater role when a behavior is new. Similar to Teo & Pok (2003), Hung et al. (2003) also used the social factors in their research model. They classified social factors as peer influence and external influence (Hung et al., 2003). Hung's peer influence is similar to our internal influence construct.

## CHAPTER 4

### METHODOLOGY

This study was started in September 2005. Lots of work was carried out for two years. In addition to literature review, qualitative studies including interviews, brainstorming sessions, and an expert focus group study via e-mail were employed to build and test this research's hypotheses. In addition to these studies, different constructs of the final research framework were tested via different pilot studies. In the final step, a quantitative study has been conducted. In the development process of the framework and survey scale for this study, a series of empirical studies were administered. Table 4.1 summarizes these studies.

Table 4.1 History of Research Studies

Study	Date	Sample	Remarks	Publication
Adoption Factors of Mobile Services	Jan. 2006	40	48 questions, 17 constructs	ICMB '06
<i>Expansion of sample</i>	Oct. 2006	101	same questions	
Interviews	Dec. 2006	12	12 questions, 28 constructs	PICMET '07
Brainstorming	Mar. 2007	10	19 constructs	
Expert Focus Group	Apr. 2007	11	2 questions, 28 constructs	
Pilot Study	May, 2007	8	35 questions, 18 constructs	
Experimental Study	May, 2007	102	35 questions, 18 constructs	

Qualitative studies started with the literature survey. For this purpose, studies about mobile services and theories about research models were investigated in depth. In the References section, you may find detailed information about references. After and during reviewing literature, interviews were conducted.

## Interviews

Face to face, semi-structured, in-depth interviewing with mobile service users was conducted. The goal of the interview is to deeply explore the participants' point of view, feelings and perspectives about mobile services. In this sense, in-depth interviews yielded a lot of information. The data for the current research was extracted from interviews concerning the adoption factors of mobile services, especially information-based services. Users were categorized as experienced and novice users according to their usage level of mobile services and number of different services they had.

The analysis of the interview data concentrated on identifying the adoption factors of mobile services. The minimum selection criterion for participants was experience on SMS use. Experience on SMS use was estimated to be necessary to be able to discuss the adoption factors of more advanced mobile services.

In our previous quantitative research (Kargin & Basoglu, 2006), the connection between satisfaction, attitude, usefulness, ease of use, entertainment, mobility, social factors, personalization, experience, content, image, external influences, WOM (Word of Mouth), cost and innovativeness were examined. Based on the findings of our previous study, new constructs have been explored during interviews. These were face-to-face interviews with twelve mobile service users, six of them were experienced users, and others were novice users. The interviewees were aged between 25 and 35. Six of the respondents were male, and eight of them were female. Users were also categorized as experienced and novice users according to their service usage experiences and number of different services they use. The profiles of different groups are as follows:



- 6 novice users: Average age of this group is 32. They have 1.5 years mobile service experience and they have one service on average except SMS.
- 6 experienced users: Average age of the group is 27. They have 3 years of mobile service experience and they are using four different services on average except SMS.

100% of the interview participants had at least one mobile device in use and used at least one mobile service. The sample consists of high school graduates, university students, university graduates or master graduates. Each interview was audio recorded; notes were taken and each of them took approximately one hour. Interviews were reported after each meeting.

### Brainstorming Sessions

After interviews, a brainstorming session was conducted to generate new ideas and new constructs about mobile service adoption. Brainstorming is usually considered a task of divergent thinking, and the ideas produced in most research on brainstorming are counted and scored (McGlynn et al., 2004). Brainstorming is a specific technique developed by Alex F. Osborn who introduced the modern brainstorming session in 1938 as a means of using the brains to storm a problem (Osborn, 1963).

Before the brainstorming session, a brainstorming plan was developed. It was ensured that everyone participating in the brainstorm session understood and agreed with the aim of the session. The brainstorming session was carried out with 10 people. 4 of them were experienced users. Average age of the group was 28, and education level was high (university or above). 4 of the participants were male, and 6

of them were female. When scheduling the meeting, a brief explanation of the problem and history of the study was given. This helped participants prepare mentally for the session and focus on the particular issue. When inviting individuals to the session, people with different backgrounds and degrees of expertise were chosen. The rules of brainstorming were explained before the session. The brainstorming session lasted approximately one hour and ten participants were invited to the meeting. Some of the participants were experienced in mobile service usage, some of them were not. During the meeting, notes were taken and the whole meeting was video-recorded. A whiteboard was used for brainstorming since ideas were written on the whiteboard. After the session, the brainstorming notes were edited, the ideas were arranged and the video was watched again. After these steps, a brainstorming session document was prepared. According to the session document, mobile service adoption taxonomy was modified.

#### Expert Focus Group Study

After the brainstorming session, an expert focus group study was conducted via e-mail to verify the constructs and their importance levels. This study was carried out with eleven people who have experience with mobile service usage and also 6 of them were employees in telecommunication sector. Average age of the expert group was 28 and education level was high (university degree or above). 3 of them were male, and 8 of them were female. The study had two questions. The first question tried to measure the importance levels of construct groups (see Fig. 4.1). The second question was about selecting the most important constructs during mobile service

usage or design. The questions may be seen in Appendix C. The results of this study can be found in the findings section.

Bir mobil servis ya da ürünün yararlı ve etkin bir şekilde kullanılabilmesi için aşağıda listelenen özellikler sizce ne kadar önemlidir?  
Lütfen E kolonunda **(yeşil kolon)** ilgili yerde özellikleri 1'den 10'a kadar sıralayınız (1 en önemli, 10 en önemsiz olacak şekilde)  
Yorumunuz var ise, yorum kolonuna yazabilirsiniz

Özellikler	Anlam	(1 - En Önemli - 10 En Önemsiz)	Yorum	Açıklama
Content	İçerik			Servisin sağladığı içeriğin kalitesi, miktarı, zamanında ve doğru gelmesi, içerik sağlayıcı gibi özellikleri içerir
Mobility	Mobilite			Servisler sayesinde zamandan ve mekandan bağımsız olarak istenilen bilgilere ulaşabilme. Ev ya da ofis dışındayken, otobüste ya da yolda yürürken, cep telefonu üzerinden hava durumunu öğrenebilme, oyun oynayabilme gibi düşünülebilir
Enjoyment	Zevk alma, eğlenme			Servisin zevk vermesi, eğlendirmesi, servisi kullanırken haz duyma
Personalization	Kişiselleştirme, Uyarılma			Kullanıcının kendi zevk ve isteğine göre servisi kişiselleştirip uyarlayabilmesi
Cost	Fiyat			Servisin fiyatı, birim ya da paket fiyatı
Social Influences	Sosyal Etkenler			Dış etkenler, reklamlar, WOM, farklılaşma isteği, imaj yaratma isteği gibi sosyal çevremizden gelen etkenler
User Characteristics	Kullanıcı Karakteristikleri			Kullanıcının alışkanlıkları, tercihleri, deneyimleri
Technological Factors	Teknolojik Etkenler			Servisin fonksiyonları, hızı, uygunluğu (convenience), kolaylığı
Visual Factors	Görsel Etkenler			Görsel etkenler, ekranın boyutu, rengi, çözünürlüğü, butonlar
Demographics	Kullanıcı Demografikleri			Kullanıcının yaşı, eğitimi, cinsiyeti gibi profil özellikleri

Fig. 4.1 Example question for expert focus group study

## Experimental Study and Pre-Test

The main goal of this experimental study is to obtain knowledge and inputs about mobile service adoption and design. Conjoint analysis and a questionnaire were used as data collection methods for this study. For the mobile service conjoint framework, conjoint analysis was selected to evaluate service alternatives. In a real purchase situation, consumers do not make choices based on a single attribute. Consumers examine a range of features or attributes and then make judgments or trade-offs to determine their final purchase choice. Conjoint analysis examines these trade-offs to determine the combination of attributes that will be most satisfying to the consumer. In other words, by using conjoint analysis, a company can determine the optimal features for their product or service. In addition, conjoint analysis will identify the best advertising message by identifying the features that are most important in product or service choice.









The second framework was tested via the questionnaire. The experimental study was conducted via a portable application which was coded in Microsoft Excel with Visual Basic. The application includes three different screens. The first screen aims to collect user demographics. Demographic questions include gender, age, education and mobile service experience years. The second and last screens were designed to test frameworks which were mentioned in Chapter 3. In detail, the second screen was designed to identify a hierarchy of importance of the critical factors influencing the design and the adoption of mobile services. By the help of this screen, mobile service conjoint framework was tested. For this purpose, conjoint analysis was conducted. Conjoint analysis is a statistical technique used to determine how people value different features that make up an individual product or service. SPSS Conjoint was selected for analysis. It uses the full-profile (also known as full-concept) approach, where respondents rank, order, or score a set of profiles, or cards according to preference. Each profile describes a complete product or service and consists of a different combination of factor levels for all factors of interest. Depending on conjoint analysis method, a mobile pharmacy service was described in terms of a number of attributes (constructs in this study); namely personalization, content, cost, screen size and service speed. Then, each attribute was broken down into a number of levels:

Table 4.2 Attribute Levels	
Attribute	Levels
Personalization	Exist – Not Exist
Content	SMS - Detailed SMS - MMS
Cost	Inexpensive (0.25 YTL) - Expensive (1 YTL)
Screen Size	Large – Small (176x208 pixels / 96x68 pixels )
Service Speed	Fast (1 minute) – Slow (8 minutes)

SPSS Conjoint method was used to generate alternatives with these attributes and its levels. SPSS conjoint generated sixty-four alternatives for five attributes and their levels in a traditional way. In order to decrease the number of alternatives, fractional factorial designs were used. Finally, SPSS Conjoint formed eight alternatives (Table 4.3). Each alternative have different attribute levels and therefore represents a different service or product. One of the alternatives was modified after a pilot study. Participants offered a new alternative which was somehow different from one of the alternatives. After the evaluation of this alternative, it became one of the alternatives feasible to design and meets the needs of consumers. All these alternatives were called scenarios during the experimental study.

Table 4.3 Conjoint Alternatives Generated by SPSS

Alternative #	Speed	Cost	Screen Size	Other Characteristics
1	Low	High	Small	Detailed SMS Personalization
2	Low	Low	Small	MMS
3	High	Low	Large	SMS Personalization
4	High	Low	Large	Detailed SMS
5	High	High	Large	MMS Personalization
6	High	High	Small	SMS
7	Low	High	Large	SMS
8	High	Low	Small	SMS Personalization

SıraNo	Hız	Ücret	Ekran	Diğer Özellik	SıraNo	Hız	Ücret	Ekran	Diğer Özellik
1	a	Yavaş	Pahalı	 Kişiselleştirme Detaylı SMS	5	e	Hızlı	Pahalı	 MMS Kişiselleştirme
2	b	Yavaş	Ucuz	 MMS	6	f	Hızlı	Pahalı	 SMS
3	c	Hızlı	Ucuz	 SMS Kişiselleştirme	7	g	Yavaş	Pahalı	 SMS
4	d	Hızlı	Ucuz	 Detaylı SMS	8	h	Hızlı	Ucuz	 SMS Kişiselleştirme

Sıra Değiştirme Düğmesi

▲

▼

ANKETE DEVAM

Fig. 4.2 Screen-shot of alternative selection screen

Users were asked to rank these eight alternatives. These alternatives were presented as classical card view. And each card can be ranked easily by the help of choice buttons. Users may rank cards from 1 to 8. “1” is for the most desirable one, “8” is for the least desirable one. Each card has a detailed button on it. User can click this button and see all details of the related alternative. Detail of all alternatives can be seen in Appendix D.

The last screen of the study was designed to test hypotheses of determinants of mobile service intention framework. Questions were presented in two sets. The first set of questions (seventeen items) aimed to explore and test constructs by considering pharmacy mobile services generally. These seventeen items are related to experience, innovativeness, mobility, internal influence, external influence, usefulness, image, cost, enjoyment, content, personalization and visual factors. The items of the questionnaire can be seen below (Table 4.4).

Table 4.4 First Set of Items

Construct	Items
Usefulness	I find this service as useful as the Internet. This service makes me get information wherever I am, out of office or home.
Satisfaction	I am satisfied with this service.
Personalization	It is important to be able personalize service features according to my needs.
Cost	The price of this service influences my decision about use. I would use this service more if its price were lower.
Visual Factors	Screen size, visual quality and key layout affects usage of mobile services
Service Speed	Speed of service is an important factor.
Content	Content of this service is high-quality. The contents of this service are sufficient.
Enjoyment	Using this service is enjoyable.
Image	Using this service makes me different from others.
Experience	I am experienced in using mobile services.
Innovativeness	Before using new mobile services, I want to see others' experiences.
Mobility	Being out of office and home is an important reason to use mobile services.
Internal Influence	People around me affect my decisions to use mobile services.
External Influence	Mobile service advertisements affect my usage decision.

The second set was composed of ten items. They were related to usefulness, attitude, intention and ease of use. The items of these constructs were asked related to the fifth scenario which has high speed, high cost, large screen, multimedia messaging, and personalization. The items can be seen below (Table 4.5).

Table 4.5 Second Set of Items

Construct	Items
Attitude	It is a good idea to use this service. I want to use this service.
Intention	I do not think about using this service. I am planning to use this service. I advise other people to use this service. I will use this service or a similar service in new future.
Ease of Use	It is difficult to use this service.
Usefulness	I need to use this service. This service makes my life easy. This service will provide extra time for my life.

All of the questions were close-ended, and they were four point Likert-scale questions. In these questions, 1 was equal to strongly disagree while 4 represented strongly agree. Most of the items corresponding to the constructs were adopted from relevant prior research, and also some of them were constructed considering the interviews, brainstorming and focus group study.

The items of this instrument and the instrument itself were examined via a pilot study. This pilot study was done with ten people. According to comments of the pilot group, the instrument was modified. After the pilot study, the experimental study was conducted with one hundred and two people. The data from this study was collected in a Microsoft Office Excel worksheet. After collecting, the data was sorted, transposed and arranged and became SPSS suitable. Then the organized data was transferred to an SPSS file for analyses. The documents used in the experimental study can be seen in Appendix D.



## CHAPTER 5

### FINDINGS

#### Findings of Interviews

As a result of interviews and literature review, mobile service adoption taxonomy was created. For this classification, interviews were analyzed deeply, variables about services adoption were selected and each comment of users was assigned to a related class. The proposed mobile service adoption taxonomy as a result of interviews and literature review is shown in Fig. 5.1.

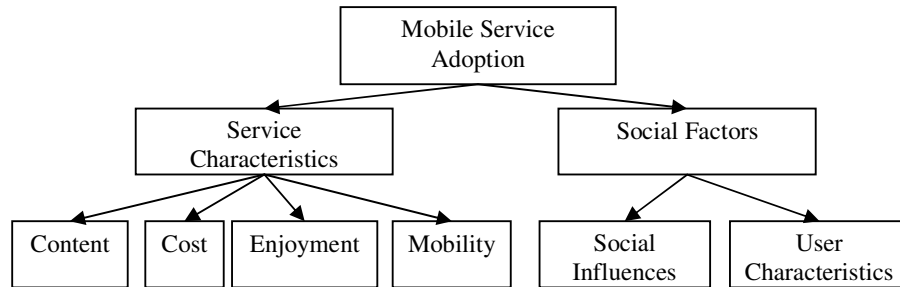


Fig. 5.1 Mobile service adoption taxonomy

According to the taxonomy, mobile service adoption has two main aspects; *service* aspect and *social* aspect.

In the *service* aspect, there are four main categories; cost, content, enjoyment and mobility. *Content correctness, content delivery time, content quality, content quantity, and content provider* are the ingredients of content. *Cost* is another aspect of mobile services which can be compared with value of services. Service costs are also researched by Carlsson et al. (2005). *Mobility* and location independence are also heavily pointed out during interviews. Mobile computing provides users with

more freedom, as they can access information and services without having to find a physical place, such as an office or an Internet cafe (May, 2001). *Enjoyment* is also a category of service aspect.

Social aspect has two main categories; user characteristics and social influences. User characteristics can be listed as habits, experiences, innovativeness or preferences. Social influences are external influences such as advertisements or other users' comments. The need for differentiating oneself may also be included among social influences.

Two other categories, ease of use and usefulness are factors that are affected by either service or social aspects. These intermediary variables (i.e. perceived ease of use, perceived usefulness) have been adapted from Technology Acceptance Model, since a great deal of past empirical research reached a consensus on the idea that these are the major antecedents of an individual's acceptance / rejection decision for a new technology. In literature, perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989). Davis and his colleagues (Davis, 1989; Davis et al., 1989) demonstrated that perceived ease of use affects perceived usefulness. Usefulness refers to "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989). Ease of use and usefulness are the categories that are not in service or in social aspect of our taxonomy. They may be called intermediary or mediating factors. They are influenced by either service or social aspect of the mobile service adoption taxonomy. Technology factors and visual factors are also intermediary factors. Functionality, convenience and service speed are examples of technology factors. The screen size, color resolution, navigation buttons, buttons of cellular phones are examples of visual factors.

To be clear about power of aspects and categories, percentage of weights for the mobile service adoption aspects and categories are calculated. The percentages are calculated depending on the comments of the users. According to the results, ease of use and usefulness categories, which are either in service or in social aspect, have 49% weight. This is more than the strength of social and service aspects of the taxonomy. 34% of the interviewees' comments are about the service aspect. Lastly, weight for the social aspect is only 17% (see Table 5.1).

Table 5.1 Weights of Mobile Service Adoption Taxonomy Aspects

Mobile Service Adoption Aspects	Weight (%)
Intermediary	49%
Service Aspect	34%
Social Aspect	17%

Weights are also presented in detail by categories (see Table 5.3). EoU category has the highest weight. 36% of the interviewees' comments are about EoU. Usefulness has the second highest weight which is 13%. Content, which is a category of service aspect, has the third highest weight. 12% of the interviewees' comments are about content category. For details, see Table 5.2.

Table 5.2 Weights of Mobile Service Adoption Taxonomy's Categories

Category	Aspect	Weight (%)
EoU	Intermediary	36%
Usefulness	Intermediary	13%
Content	Service	12%
Social Influences	Social	12%
Mobility	Service	9%
Cost	Service	8%
Enjoyment	Service	5%
User Characteristics	Social	5%

## Findings of the Brainstorming Session

After analyzing the interview results, a brainstorming session was conducted with ten participants. First of all, while talking about general factors which lead to service usage, entertainment, usefulness, ease of use, cost, prejudgment, service speed, service quality, content, differentiation, image, visual factors, emergency cases, customer permission, personalization and WoM were mentioned. Most of these factors are parallel to literature and our previous studies. These factors were explained with interesting examples and cases. Examples about some of the factors can be seen in Table 5.3.

After discussion about general service usage factors, specific usage reasons were asked about Mobile TV and wireless healthcare systems. Mobility, efficient time usage, security and privacy were mentioned. In fact, participants did not have sufficient information about these emerging services.

At the end of the session, participants identified three most important reasons about their service usage. Mobility, being informed, cost, content, service speed, ease of use and personalization were seen as the more important factors among others.

Table 5.3 Examples about Mobile Service Use Factors

Factors	Examples
Entertainment	Downloading different ring tones, reading horoscopes.
Usefulness	Mobile Marketing Promotions, Free Minutes, instant news messages, sending messages via SMS which can not be communicable face-to-face, real-time information.
Ease of Use	Services reach to you, you do not have to find them, easy way of voting for the television program contests.
Cost	There is prejudgment about cost of MMS; in fact it is not expensive. Ring tones are expensive, so people do not prefer to buy ring tones via logo-melody service.
Service Speed	It should provide an immediate answer.
Content	Melodies should have smooth and high-quality sound, content should be sufficient.
Differentiation	Especially, logo-melody services are being used for the purpose of differentiation, image is an important factor.

## Findings of Expert Focus Group Study

After conducting the brainstorming session and analyzing users' responses and comments, an expert focus group study was carried out. The questions in this study were prepared according to the results of all previous studies and literature review.

According to the evaluations of participants, content, enjoyment, cost, mobility, service speed, visual factors, personalization, social influences, demographics and user characteristics were rated respectively.

In the second question, all constructs were divided into items. Content correctness and quality were selected as important items of content. Then, content delivery time appeared as the next important item.

On the other hand, according to the evaluations of experts, image is a more important usage factor than external and internal influences. Users may use these services to obtain distinctive images from others.

As parallel to our previous findings, demographics were not rated high. They think that they are not main factors which affect the adoption process.

## Findings of the Experimental Study

### Profile of Respondents

The profile of respondents is presented in Table 5.4. This table represents all the frequency analysis conducted on demographic variables. Only mobile service experience construct was regrouped. The results indicate that our sample was predominantly aged between 26 and 30. The gender distribution of the study subjects was 43% females and 57% males. This represented a homogeneous sample with

regard to gender. The educational level of the respondents was high. The sample predominantly consists of university students, undergraduates or graduates. 25% of respondents had mobile service experience less than or equal to 2 years and only 9% of respondents had experience more than 8 years.

Table 5.4 Profile of Respondents

Range	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Gender				
Female	44	43	43	43
Male	58	57	57	100
Age				
21–25	50	49	49	49
26–30	41	40	40	89
31–40	11	11	11	100
Education				
High School	1	1	1	1
University Student	16	16	16	17
Undergraduate	45	44	44	61
Graduate	40	39	39	100
Mobile Service Experience				
<= 2 years	25	25	25	25
>2 – 4 years	25	25	25	50
>4 – 6 years	21	21	21	70
>6 – 8 years	21	21	21	91
>8 years	9	9	9	100

Additionally, gender and age of the sample were analyzed via crosstab analysis. According to the results of the analysis, men had more mobile service experience than women. 79 % of men had an experience of more than two years while only 70 % of women had this kind of experience. The results can be seen in Table 5.5.

Table 5.5 Gender-Mobile Service Experience Crosstab Analysis

		Mobile Service Experience					Total
		<=2 years	>2 - 4 years	>4 - 6 years	>6 - 8 years	>8 years	
Gender	Female	13	11	9	8	3	44
	Male	12	14	12	13	6	57
	Total	25	25	21	21	9	101

Crosstab analysis for age - mobile service experience showed that as age increases, experience increases, too. While all people were aged between 31 and 40 had an experience of more than 2 years, only 72 % of users were aged between 21 and 25 had this kind of experience (see Table 5.6).

Table 5.6 Age - Mobile Service Experience Crosstab Analysis

		Mobile Service Experience					Total
		<=2 years	>2 - 4 years	>4 - 6 years	>6 - 8 years	>8 years	
Age	21 – 25	14	11	11	13	1	50
	26 – 30	11	11	6	7	5	40
	31 – 40	0	3	4	1	3	11
	Total	25	25	21	21	9	101

In addition to frequency and crosstab analysis, ANOVA analysis was also carried out to understand the profile of the respondents. Constructs were sorted by significance values. 0.05 was accepted as the significance level and constructs with significance less than 0.05 were taken into account. According to the results of ANOVA for age, people aged between 26 and 30 were affected by their peers and close friends more than others. Table 5.7 displays the results of ANOVA analysis done for age.

Table 5.7 Results of ANOVA for Age

Construct	F	Sig.	21 – 25	26 - 30	31 - 40
Internal Influence	7.31	0.00	2.34	3.07	2.73
Image	5.59	0.01	2.04	2.78	2.18
Content	3.41	0.04	2.73	3.01	2.45

In accordance with the results, users who had more than eight years' experience were found to have the highest level of benefit from mobile service usage (see Table 5.8).



Table 5.8 Results of ANOVA for Mobile Service Experience							
Construct	F	Sig.	0-2	2-4	4-6	6-8	>8
Useful	3.64	0.01	3.37	3.33	3.03	3.05	3.78

One interesting result was found out from gender analysis. As seen in Table 5.9, females used the mobile services for create an image in their environment. However, males gave a low score for image construct. Additionally, females feel more enjoyment than males during mobile service usage.

Table 5.9 Results of ANOVA for Gender				
Construct	F	Sig.	Female	Male
Image	8.27	0.00	2.70	2.09
Enjoyment	4.61	0.03	2.23	1.84

### Reliability Analysis

While studying the adoption of mobile services, all items in the questionnaire were measured using a four-point Likert-type scale where 1 equaled to “strongly disagree” and 4 was equal to “strongly agree. The summated scale variables (constructs), their items and questions are shown in Appendix D. In order to ensure the desired balance, some of the questions were worded reversely. Reliability analysis was conducted for the summary constructs composed of Likert-scale questions.

The reliability of the measurement instrument was carried out using reliability analysis. The internal consistency reliabilities of the summated scale variables (constructs) were tested with Cronbach’s Alpha coefficient ( $\alpha$ ) that should not be below 0.60. Table 5.10 shows results of reliability analysis. All alpha values are above the threshold, 0.60.

Table 5.10 Summary of Reliability Analysis

Construct	Number of Items	Mean	St. Dev.	Cronbach's Alpha
Cost	2	6.91	1.30	0.69
Content	2	5.63	1.44	0.77
Usefulness	3	9.78	1.82	0.81
Attitude	2	6.28	1.49	0.91
Intention	4	12.02	3.13	0.88

### Descriptive Statistics

Descriptive statistics of all constructs are summarized in Table 5.11. The table includes means, standard deviations, minimum, maximum values and standard errors of all constructs. N is the number of respondents who replied each question of the related construct. The result of the descriptive statistics shows that cost is an important factor for users. Respondents prefer lower prices. Users also gave higher values for visual factors.

Table 5.11 Descriptive Statistics

Constructs	N	Mean	Std. Deviation	Min	Max	Std. Error
Cost	102	3.46	0.65	1	4	0.06
Visual Factors	102	3.42	0.84	1	4	0.08
EoU	102	3.28	0.88	1	4	0.09
Usefulness	102	3.26	0.61	1.7	4	0.06
Attitude	102	3.14	0.75	1	4	0.07
Personalization	102	3.09	0.80	1	4	0.08
Satisfaction	102	3.06	0.81	1	4	0.08
External Influence	102	3.05	0.78	1	4	0.08
Intention	102	3.00	0.78	1	4	0.08
Experience	102	2.92	1.00	1	4	0.10
Speed	102	2.92	0.74	1	4	0.07
Content	102	2.81	0.72	1	4	0.07
Internal Influence	102	2.68	0.97	1	4	0.10
Innovative	102	2.48	1.04	1	4	0.10
Mobility	102	2.41	1.02	1	4	0.10
Image	102	2.35	1.11	1	4	0.11
Enjoyment	102	2.01	0.91	1	4	0.09

They thought that visual characteristics are important ingredients of services. In terms of EoU, the results show that users do not have difficulty in using the services. Moreover, respondents find the mobile services useful and their attitude to use them is positive, and they are pleased about personalization characteristics of services, and they prefer this feature during purchase decision.

On the other hand, in general, users think that mobile services does not contribute to personal image very much and they do not feel so much pleasure or fun during service usage.

#### Results of Mobile Service Conjoint Analysis

Mobile service conjoint framework hypotheses were tested via conjoint analysis of SPSS conjoint module. Using conjoint analysis, we tried to answer questions such as: Which attributes are important or unimportant to the respondents? What levels of product attributes are the most or least desirable in the respondents' mind? What is the market share of preference?

During analysis, average importance values for attributes and utility scores for attribute levels were calculated. According to the results, the attribute "speed" showed the greatest range with the resulting average importance score of 37.5, while the attribute "personalization" showed the smallest range with the resulting average importance score of 8.29. The range of the utility values (highest to lowest) for each factor provides a measure of how important the factor was to overall preference. Factors with greater utility ranges play a more significant role than those with smaller ranges. Table 5.12 provides a measure of the relative importance of each

factor known as an importance score or value. The values are computed by taking the utility range for each factor separately and divide by the sum of the utility ranges for all factors. The values thus represent percentages and have the property to add up to 100. The calculations are done separately for each subject, and the results are then averaged over all the subjects. Average importance scores of all attributes can be seen in Table 5.12.

Table 5.12 Average Importance Score of Attributes

Attribute	Average Importance Score
Speed	37.47
Cost	34.87
Content	10.49
Screen	8.88
Personalization	8.29

Table 5.13 shows the utility (part-worths) scores and their standard errors for each factor level. Higher utility values indicate greater preference. As expected, there is an inverse relationship between costs and utility, with higher cost corresponding to lower utility (larger negative values mean lower utility).

Table 5.13 Utility Scores

Attributes	Levels	Part-Worths Utility	Std. Error
Speed	Fast	1.102	0.051
	Slow	-1.102	0.051
Cost	Inexpensive	1.026	0.044
	Expensive	-1.026	0.044
screen	Small	-0.261	0.044
	Large	0.261	0.044
personalization	Exists	0.244	0.044
	not exist	-0.244	0.044
content	SMS	-0.338	0.059
	Detailed SMS	0.279	0.067
	MMS	0.059	0.067
(Constant)		4.309	0.045

Table 5.14 displays two statistics, Pearson's R and Kendall's tau, which provide measures of the correlation between the observed and estimated preferences.

Table 5.14 Correlation Coefficients		
	Value	Sig.
Pearson's R	1.000	.000
Kendall's tau	1.000	.000

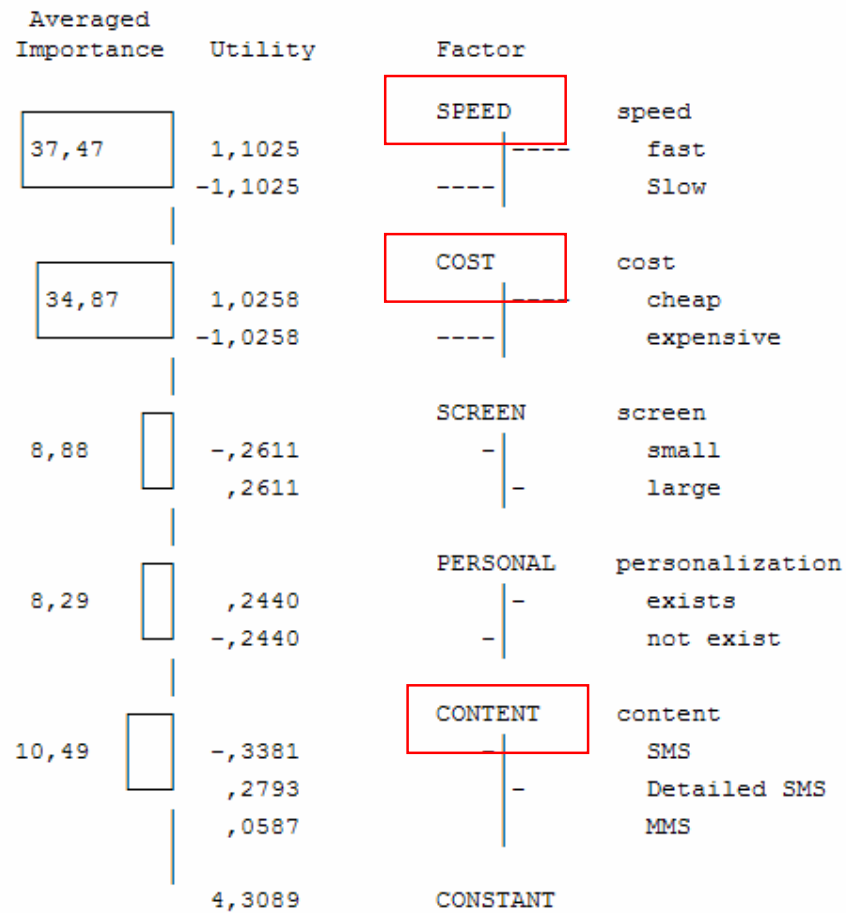


Fig. 5.2 Results of mobile service conjoint model

In addition to summarizing the average utilities, which are explained above, each respondent's utility calculations were done separately. Figure 5.3 represents the preference of one of the respondents. As seen in figure 5.3, speed is not the most

important factor as opposed to overall preference of our sample. For this respondent, content (36%), speed (29%), screen (19%), cost (14%) and personalization (2%) are important in the written order. Content is the most important factor in service purchase as it has the highest range of utility values. Content is followed in importance by the speed of the service. Based on the range and value of the utilities, we can see that personalization is relatively unimportant to this respondent. Therefore, advertising which emphasizes personalization would be ineffective. This person will make his or her purchase choice based mainly on content and then on the speed of the service. Marketers can use the information from utility values to design products and/or services which come closest to satisfying important consumer segments. This technique, therefore, can be used to identify market opportunities by exploring the potential of product feature combinations that are not currently available. Table 5.15 shows average importance scores of attributes for the selected respondent.

Table 5.15 Subject – II's Average Importance Score

Attribute	Average Importance Score
content	36.21
speed	28.78
screen	19.18
cost	13.91
personalization	1.92

SUBJECT NAME: 2

Importance	Utility(s.e.)	Factor	
28,78	1,3636 ( ,0643)	SPEED	speed
	-1,3636 ( ,0643)	---	fast
		---	Slow
13,91	,6591 ( ,0557)	COST	cost
	-,6591 ( ,0557)	-	cheap
		-	expensive
19,18	-,9091 ( ,0557)	SCREEN	screen
	,9091 ( ,0557)	--	small
		--	large
1,92	-,0909 ( ,0557)	PERSONAL	personalization
	,0909 ( ,0557)		exists
			not exist
36,21	-1,4545 ( ,0742)	CONTENT	content
	-,5227 ( ,0840)	-	SMS
	1,9773 ( ,0840)	----	Detailed SMS
		----	MMS
	4,5227 ( ,0572)	CONSTANT	

Fig. 5.3 Conjoint result of subject - II

Depending on the conjoint scores, market shares for all alternatives were calculated (see Table 5.16).

Table 5.16 Alternatives and Market Shares

Card	Speed	Cost	Screen	Personalization	Content	Rank								Average Score	Market Share
						1	2	3	4	5	6	7	8		
Alternative 4	fast	inexpensive	large	not exist	Detailed SMS	35	27	25	8	5	2	0	0	6,73	19%
Alternative 3	fast	inexpensive	large	exist	SMS	25	40	23	7	7	0	0	0	6,60	18%
Alternative 8	fast	inexpensive	small	exist	SMS	22	17	34	13	10	1	1	4	6,08	17%
Alternative 5	fast	expensive	large	exist	MMS	13	4	12	29	30	9	2	3	4,95	14%
Alternative 2	slow	inexpensive	small	not exist	MMS	2	8	2	26	10	34	12	8	3,79	11%
Alternative 6	fast	expensive	small	not exist	SMS	2	3	2	15	25	33	20	2	3,54	10%
Alternative 1	slow	expensive	small	exist	Detailed SMS	3	2	3	4	7	14	36	33	2,44	7%
Alternative 7	slow	expensive	large	not exist	SMS	0	1	1	0	8	9	31	52	1,86	5%

Alternative 4 was chosen as the most preferred alternative. The attribute levels of Alternative 4 can be seen in Table 5.17. In the light of these facts, it can be said that Alternative 4 will obtain more market share than others. Fig. 5.4 represents market shares of alternatives.

Table 5.17 Attribute Levels of Alternative 4

Card	Alternative 4
Speed	fast (1 minutes)
Cost	inexpensive (0.25 YTL)
Screen	large (176x208 pixels)
Personalization	not exist
Content	detailed SMS

Alternative 3 and Alternative 8 followed the Alternative 4, respectively. Their market shares were very close to Alternative 4. The attribute levels of Alternative 3 and Alternative 8 can be seen in Table 5.18 and Table 5.19, respectively.

Table 5.18 Attribute Levels of Alternative 3

Card	Alternative 3
Speed	fast (1 minutes)
Cost	inexpensive (0.25 YTL)
Screen	large (176x208 pixels)
Personalization	exist
Content	SMS

Table 5.19 Attribute Levels of Alternative 8

Card	Alternative 8
Speed	fast (1 minutes)
Cost	inexpensive (0.25 YTL)
Screen	small (96x68 pixels)
Personalization	exist
Content	SMS

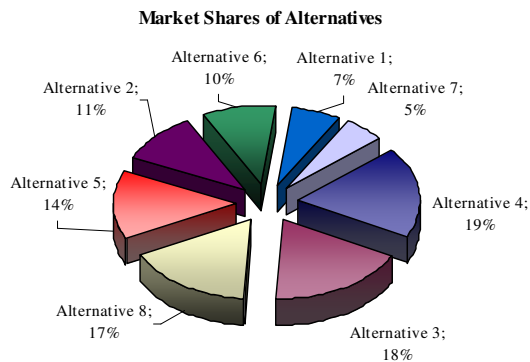


Fig. 5.4 Market share chart of alternatives



### Determinants of Mobile Service Intention Conceptual Model

Linear regression analyses were used to test the hypotheses of determinants of mobile service intention framework. Because this model consists of TAM variables, linear regression was appropriate as most of the prior TAM studies have used regression rather than other methods. The results obtained by linear regression analysis are presented in Figure 5.5.

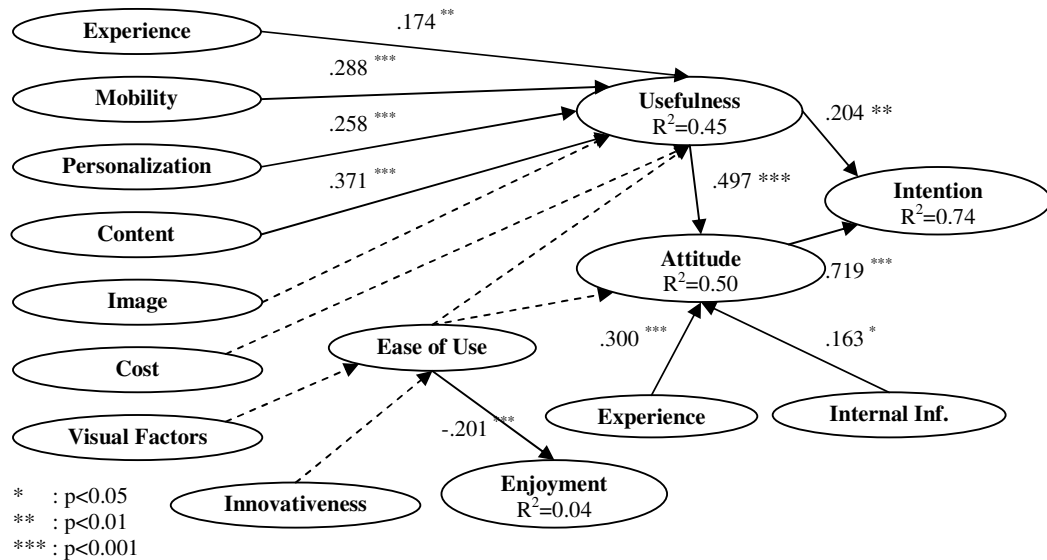


Fig. 5.5 Results of determinants of mobile service intention framework

According to the results, EoU does not have a significant effect on attitude to use mobile services as opposed to TAM and our hypothesis. EoU is also used in the framework to explain usefulness. However, contradicting Davis and his colleagues' studies (Davis, 1989; Davis et al., 1989) and our study, EoU does not affect usefulness. The model also reveals that for mobile services (in our case, it is mobile pharmacy service); image and cost do not have an impact on usefulness as opposed to our framework. In addition to these, innovativeness and visual factors has no influence on EoU by contradicting our framework model. In literature,

innovativeness is defined as the extent to which an individual is early in adopting new ideas relative to other members of a society (Rogers, 1993). However, in our study, this hypothesis was not verified.

The model shows that usefulness and attitude are direct determinants of consumer intention with the coefficients of .204 and .719, respectively. Among them, attitude has the strongest impact on consumer intention. Earlier studies confirm the effects of usefulness and attitude on consumer intention (Davis, 1989).

An important aspect of this model is that EoU has a strong indirect effect on enjoyment with a beta coefficient of -.201. Consumers feel enjoyment more as service becomes difficult. Mobile games can be an example for this result. As the level of games advances (difficulty increases), users enjoy it more.

Mobility has an impact on usefulness and an indirect influence on consumer attitude and intention via a beta coefficient of .288. The more mobile the user is, the more valuable mobile computing is to the user (Pagani, 2004).

Content and experience have positive and direct effects on usefulness, and an indirect effect on attitude via usefulness as proposed in the framework.

Another significant finding of this model is that personalization has a direct impact on usefulness and indirect impact on attitude via usefulness similar to mobility, content and experience constructs. Making it exclusive to the individual in various ways is an important part of any service. Consumers should feel services are unique to them.

Based on the findings, internal influence and experience have positive effects on attitude towards using mobile services. For this type of information and entertainment services, ideas of people around users have a direct impact on attitude. Especially, when individuals have no or little experience on the related services, they

will be affected by opinions of reference groups (Teo et al., 2003). Peer influence plays a greater role when a behavior is new. Similar to Teo et al. (2003), Hung et al. (2003) also used the social factors in their research model. They classified social factors as peer influence and external influence (Hung et al., 2003). Hung's peer influence is similar to our internal influence construct.

### Sample Clustering

In addition to the models of the study, mobile service adoption factors were also tried to be explained by sample clustering method. For that reason, different cluster analyses, having two, three and four clusters, were applied. These cluster analyses were done depending on service attributes such as speed, cost and depending on technology and personality characteristics such as experience, innovativeness and enjoyment.

After forming the segments according to cluster analyses, characteristics of these segments were compared by ANOVA analysis to get to know the characteristics of mobile service users. In this part of the study, cluster analysis with four clusters was explained in depth. Results of other cluster analyses, having two and three clusters, can be seen in Appendix E. By the way, names given to the clusters are subjective and they may be changed.

The most important and interesting results were obtained with cluster analysis having four samples. This cluster analysis was done depending on service attributes which were used in conjoint analysis. Number of cases in each cluster is ten, thirty-six, twenty, and thirty-six, respectively (see Table 5.20).

Table 5.20 Number of Cases in Clusters	
Clusters	Number of Cases
SMS Addict	10
Price-Sensitive	36
MMS Addict	20
Speedy	36

First of these clusters was named *SMS addicts*. The results showed that they prefer SMS (Short Messaging Service) and detailed SMS instead of MMS. Second cluster represented the *price-sensitive users*. The most significant differentiator of this cluster is that they prefer lower prices. In addition to this, taking a quick reply from the service is not an important factor. And also, they are indifferent to content, screen size and personalization features. Third cluster was called *MMS (Multimedia Messaging Service) addicts*. They prefer messages with pictures and sounds, namely MMS instead of SMS. They are indifferent to cost. It can be more or less. The last cluster represented *speedy users*. They would like to get a response from the service quickly. Personalization and large screen size are not very important for this cluster. The details of the analysis can be seen in Fig. 5.6 and Table 5.21.

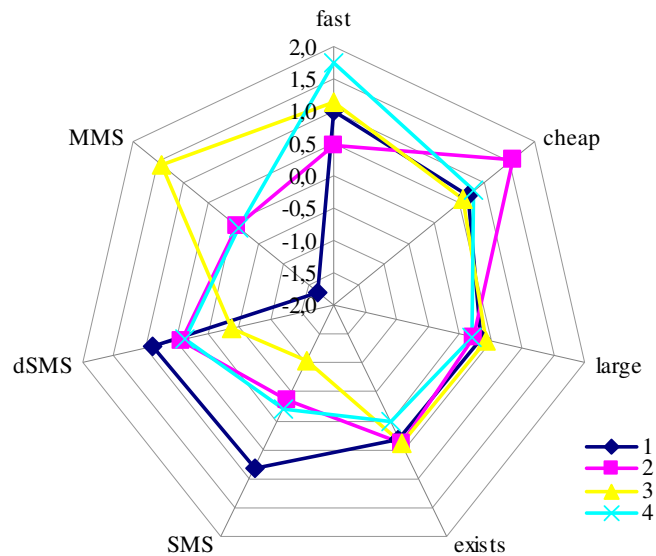


Fig. 5.6 Cluster analysis result with four clusters (service attributes)

Table 5.21 Results of Cluster Analysis with Four Clusters (Service Attributes)

Attribute	Level	F	Sig.	SMS Addict	Price-Sensitive	MMS Addict	Speedy
Speed	Fast	41.90	.000	1.01	0.46	1.15	<b>1.74</b>
Cost	inexpensive	28.39	.000	0.70	<b>1.59</b>	0.58	0.81
Personalization	Exists	4.49	.005	0.30	0.40	<b>0.40</b>	-0.01
Content	SMS	24.69	.000	<b>0.80</b>	-0.37	-1.05	-0.23
Content	detailed SMS	16.18	.000	<b>0.90</b>	0.41	-0.40	0.35
Content	MMS	98.22	.000	-1.70	-0.05	<b>1.45</b>	-0.12

After cluster analysis with four samples, ANOVA analysis was done for these clusters (see Table 5.22). Constructs with a significance level less than 0.05 were found to show differences between different clusters and were taken into account. According to the results of ANOVA analysis, *MMS Addicts* want to differentiate themselves by using mobile services. Image is a very significant factor for *MMS Addict* segment.

Table 5.22 Results of ANOVA for Clusters (Service Attributes)

Constructs	Levels	F	Sig.	SMS Addict (1)	Price-sensitive (2)	MMS Addict (3)	Speedy (4)
Content	MMS	98.22	0.000	-1.70	-0.05	<b>1.45</b>	-0.12
Speed	Slow	41.90	0.000	-1.01	<b>-0.46</b>	-1.15	-1.74
Speed	Fast	41.90	0.000	1.01	0.46	1.15	<b>1.74</b>
Cost	inexpensive	28.39	0.000	0.70	<b>1.59</b>	0.58	0.81
Cost	Expensive	28.39	0.000	-0.70	<b>-1.59</b>	<b>-0.58</b>	-0.81
Content	SMS	24.69	0.000	<b>0.80</b>	-0.37	-1.05	-0.23
Content	detailed SMS	16.18	0.000	<b>0.90</b>	0.41	-0.40	0.35
Personalization	not exist	4.49	0.005	-0.30	-0.40	-0.40	<b>0.01</b>
Personalization	Exist	4.49	0.005	0.30	0.40	<b>0.40</b>	-0.01
Cost	Cost	5.16	0.002	3.45	<b>3.76</b>	3.18	3.31
Image	Image	3.35	0.022	2.10	2.08	<b>3.00</b>	2.33

Another cluster analysis with four samples was done depending on mobile service users' characteristics. Fig. 5.7 and Table 5.24 represent the results of cluster

analysis. Number of cases in each cluster is twenty-two, twenty-four, thirty-six, and twenty respectively, (see Table 5.23).

Table 5.23 Number of Cases in Clusters

Clusters	Number of Cases
Innovators	22
Image-Seekers	24
Extroverted	36
Introverted	20

First of these clusters represented the users who are innovative. Therefore, they were called *innovators*. They do not follow others to use new services. They like new experiences and they follow the latest technology. They are satisfied with using mobile services. Second cluster members were called *image-seekers*. They are not innovative and they may be affected by their peers easily. They are using mobile services to differentiate themselves. During service use, they enjoy themselves more. They are also pleased with services. Third cluster represented the *extroverted users*. They have much experience and are highly mobile. They can be affected by advertisements easily. Advertising which emphasizes mobility concept would be effective for this segment. They are also satisfied with using mobile services. Last cluster was called *introverted users*. They are not affected by their internal or external environment easily. They are also not experienced in using mobile services. Because they are introverted, they do not want to be noticed or differentiated by using services. Therefore, they do not want to obtain a noticeable image by using mobile services.

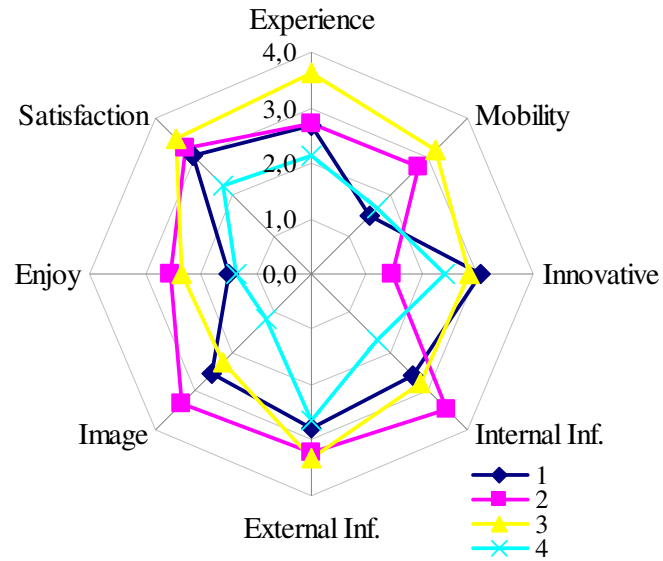


Fig. 5.7 Cluster analysis results with four clusters (user characteristics)

Constructs	F	Sig.	Innovators	Image-Seekers	Extroverted	Introverted
Experience	15.62	.000	2.68	2.71	<b>3.64</b>	2.15
Mobility	34.87	.000	1.50	2.71	<b>3.19</b>	1.65
Innovative	16.98	.000	<b>3.05</b>	1.46	2.86	2.40
Internal Inf.	20.41	.000	2.59	<b>3.46</b>	2.78	1.65
External Inf.	5.23	.002	2.77	3.21	<b>3.33</b>	2.65
Image	24.11	.000	2.55	<b>3.33</b>	2.25	1.15
Enjoy	14.07	.000	1.50	<b>2.54</b>	2.33	1.35
Satisfaction	13.35	.000	3.00	3.21	<b>3.44</b>	2.25

As in the cluster analysis which depends on service attributes, ANOVA analysis was done for clusters which were obtained by using mobile service users' characteristics. Constructs with a significance level less than 0.05 were found to show differences between different clusters and were taken into account again. Details may be seen in Table 5.25.

Table 5.25 Results of ANOVA for Clusters (User Characteristics)

Constructs	F	Sig.	Innovators (1)	Image- Seekers (2)	Extroverted (3)	Introverted (4)
Mobility	34.87	0.00	1.50	2.71	<b>3.19</b>	1.65
Image	24.11	0.00	2.55	<b>3.33</b>	2.25	1.15
Internal Influence	20.41	0.00	2.59	<b>3.46</b>	2.78	1.65
Innovative	16.98	0.00	<b>3.05</b>	1.46	2.86	2.40
Experience	15.62	0.00	2.68	2.71	<b>3.64</b>	2.15
Intention	15.23	0.00	2.92	3.18	<b>3.39</b>	2.19
Enjoy	14.07	0.00	1.50	<b>2.54</b>	2.33	1.35
Satisfaction	13.35	0.00	3.00	3.21	<b>3.44</b>	2.25
Useful	11.00	0.00	3.14	3.49	<b>3.49</b>	2.72
Attitude	10.43	0.00	3.11	3.27	<b>3.46</b>	2.45
Content	7.31	0.00	2.93	2.81	<b>3.07</b>	2.23
External Influence	5.23	0.00	2.77	3.21	<b>3.33</b>	2.65
Speed	4.45	0.01	2.95	2.92	<b>3.17</b>	2.45
Personalization	4.05	0.01	2.91	<b>3.50</b>	3.11	2.75
Cost	3.26	0.02	3.11	<b>3.65</b>	3.46	3.60

### Implications

The research may provide insights to designers and marketing experts of value added services. In addition to this, it will contribute to mobile service adoption literature.

First of all, parallel to results of past research, usefulness was found to be very important on mobile service user intention. However, contrary to literature and the framework of intention, ease of use was not found to be a direct determinant of attitude. A managerial implication of this finding is that mobile service users place a great deal of emphasis on the *usefulness* of mobile services rather than the *ease of use*.

For the determinants of mobile service intention, it is observed that usefulness and attitude are the key determinants. User experience, mobility, personalization and content through usefulness have indirect impacts on user intention to use mobile



services. During the communication of value added services, these factors should be taken into account. Establishing a rich, relevant and high-quality content is very critical for providing a value to users of mobile services. Therefore, high-quality content providers should be acquired by the operators. Mobility also brings additional natural flavor and automatically beats its traditional competitors. As a result, during the communication of the services, mobility benefit of services should be heavily emphasized.

Additionally, according to experience levels, different versions of services may be offered to different segments. Users who have more experience with mobile services should be offered more advanced services. Personalization option is also seen as a benefit. The example service, mobile pharmacy service, is not matured in terms of diffusion among mobile service users relative to short messaging service. For improving the intention and diffusion, upgrades in personalization have to be searched.

In addition to these, delivering content via SMS seems to be effective in terms of content display; however, people may still have fun and visualizations using different extensions of Multimedia Message Services. As a result, this pharmacy service may be given via MMS, in addition to SMS. For examples, especially for MMS addicts, some SMS based services may be delivered via MMS. Besides these, due to the direct impact of internal influences on user attitude, word of mouth activities may be encouraged. For this purpose, an appropriate image may be built and exposed to users, especially for people aged between 26 and 30.

On the other hand, the results for conjoint analysis reveal that speed, cost and content are the most important factors to overall mobile service preference. During the design of value added services, operators should consider these factors in depth.

Speed problem may be resolved with employing new high speed technologies. Cost is another important factor. Users prefer low cost. In addition to offering low cost, different payment methods can be searched such as credit card payment or partial payment. Some services may be offered as free for trial or loyalty purposes.

In terms of part-worths utilities, alternatives which have fast, inexpensive, detailed SMS, large screen and personalization features were preferred. Although screen size is not a direct characteristic of service, large screens were preferred by users during the service usage. This is an important insight to handset producers and operators. Operators may force handset manufacturers to produce handsets which are compatible with services.

In terms of market shares of alternatives, alternative 3 and alternative 8 were the followers of the alternative 4. All three alternatives have high-speed capability, and they are inexpensive. The following table (Table 6.1) displays the alternative levels of the most preferred alternatives:

Card	Speed	Cost	Screen	Personalization	Content
Alternative 4	fast	inexpensive	large	not exist	Detailed SMS
Alternative 3	fast	inexpensive	large	exist	SMS
Alternative 8	fast	inexpensive	small	exist	SMS

According to these results, it is understood that services which are delivered via SMS based platforms will obtain more market shares than others.

In spite of some limitations like sample size and literature inefficiency about mobile service adoption, it is considered that findings of this study will contribute to the mobile service adoption literature. In addition to this, it will provide insights for mobile service & product managers during service design and requirement phases in

the telecommunication industry. Value added services' marketing experts will also gain some additional insights about users' behaviors, needs and preferences. They may use them in their marketing activities accordingly.

### Limitations of the Study

During this study, many limitations were encountered.

First of all, sample size of 102 may be appropriate, but having a larger sample size may provide more beneficial and fruitful results. However, due to burden of answering time in the application, the return rate fell below the estimations.

Secondly, the respondents of the study represent people were aged between 21 and 40. This may be seen as a limitation. However, since value added services target young generation, it may seem acceptable.

In addition to these, the experimental study was conducted only in Turkey, so culture effect could not be estimated. It is also limited with Istanbul, there is no other city. Further studies in mobile service adoption area may extend this study. Adoption factors may be analyzed on larger samples from different cultures. By this way, the effect of culture may be estimated.

Moreover, literature on mobile service adoption was insufficient. To overcome this, articles related to new technologies and information systems were used. Industrial reports were also heavily referred.

## CHAPTER 6

### CONCLUSION

Some technology forecast studies show that mobile systems will gain more popularity and will diffuse into different parts of our life. Better services will be best developed by understanding the requirements of the potential users. In this study, our intention was to shed some light on the process of mobile service adoption by investigating and understanding factors affecting the users' preference and intention.

For the determinants of mobile service intention, it is observed that usefulness and attitude are the key determinants. User experience, mobility, personalization and content through usefulness have indirect impacts on user intention to use mobile services.

On the other hand, the results for conjoint analysis reveal that speed, cost and content are the most important factors to overall mobile service preference. In terms of part-worths utilities, alternatives which have fast, inexpensive, detailed SMS, large screen and personalization features were preferred.

As a result of market-share analysis, alternative 4 was selected as the most preferred service. Alternative 4 provides quick response to users (after querying, response delivers in one-minute). It is relatively inexpensive and displayed in large screen. For this alternative, content is delivered via detailed SMS which provides more and detailed information, but it does not include a map. This alternative does not include personalization option. This may be a result of desire for simplicity. Users may think that if it does not have personalization option, it will simple.

In addition to these findings, several other findings were revealed from the sample characteristics. According to the results of analyses, men had more mobile service experience than women. 79 % of men had an experience of more than two years while only 70 % of women had this kind of experience. Moreover, people aged between 26 and 30 were affected by their peers and close friends more than others. One interesting result was found out from the gender analysis. While females used the mobile services for obtaining a distinctive image in their environment, males do not have such an objective. Additionally, females feel more enjoyment than males during mobile service usage.

Further studies in mobile service adoption area may include the extension of the models with different constructs. Moreover, constructs should be analyzed on larger samples from different cultures. By this way, the effect of culture may be estimated.

The frameworks developed for this research will be very beneficial for further empirical studies in this area. Extension of this study may be accomplished by analyzing new constructs on more advanced value added services such as video-downloading and Mobile-TV. These are hot topics of today. Their adoption process may include different and interesting factors. Additionally, due to rapid changes in the mobile service and telecommunication environment, following the sectors of telecommunication and value added services will be very beneficial.

## REFERENCES

- Agarwal, R., & Prasad, J., (1998). A conceptual and operational definition of personal innovativeness in the domain of information technology, *Information Systems Research*, 9(2), 204–215.
- Agarwal, R., & Prasad, J. (1997). The role of innovation characteristics and perceived voluntariness in the acceptance of information technologies, *Decision Sciences*, 28(3), 557–581.
- Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behaviour. Englewood Cliffs, NJ: Prentice-Hall.
- Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behaviour and Human Decision Processes*, 50(2), 179–211.
- Ajzen, I., Timko, C. & White, J. B. (1982). Self-monitoring and the attitude-behavior relation. *Journal of Personality and Social Psychology*, 42, 426-435.
- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, 84, 888-918.
- Anckar, B., Carlsson, C. & Walden, P. (2003). Factors affecting adoption decisions and intents in mobile commerce: empirical insights, *16th Bled eCommerce Conference*. eTransformation, 886- 900, Slovenia.
- Bouwman, H., Carlsson, C., Moline-Castillo, F., Walden, P. (2007). Barriers and drivers in the adoption of current and future mobile services in Filland, *Telematics and Informatics.*, 24(2), 145-160.
- Carlsson, C., Carlsson, J., Hyvönen, K., Puhakainen, J. & Walden, P. (2006) Adoption of mobile devices/services – searching for answers with the UTAUT, *Institute for Advanced Management Systems Research*, Finland, 6, 132.
- Carlsson, C., Hyvönen, K., Repo, P. and Walden, P. (2005). Asynchronous adoption patterns of mobile services. *Proceedings of the Proceedings of the 38th Annual Hawaii International Conference on System Sciences (HICSS'05)*, 7, 7.
- CBR Staff Writer. (2007), Telecoms, media and entertainment developments set to significantly transform the landscape, *Computer Business Review Online*, Retrieved March 25, 2007, from [http://www.cbronline.com/article\\_feature.asp](http://www.cbronline.com/article_feature.asp).
- Cellular News, (2007). Retrieved March 30, 2007, from [http:// www.cellular-news.com /story/22101.php](http://www.cellular-news.com/story/22101.php).

- Cestre, G., Darmon, R.Y. (1998). Assessing consumer preferences in the context of new product diffusion, *International Journal of Research in Marketing*, 15, 123-135.
- Chrzan, K. & Orme, B. (2000). An overview and comparison of design strategies for choice-based conjoint analysis, *Research Paper Series*.
- Dao, D., Rizos, C., & Wang, J. (2002). Location-based services: technical and business issues, *GPS Solutions*, 6(3), 169-178.
- Davis, F.D., Bagozzi, R.P., & Warshaw, P.R. (1989). User acceptance of computer technology: A comparison of two theoretical models, *Management Science*, 35(8), 982-1003.
- Davis, F.D., Bagozzi, R.P., & Warshaw, P.R. (1992). Extrinsic and intrinsic motivation to use computers in workplace, *Journal of Applied Social Psychology*, 22(14), 1111.
- Davis, F.D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Technology, *MIS Quarterly*, 13(3), 319-340.
- Dishaw, M.T & Strong, D.M. (1998). Extending the technology acceptance model with task-technology fit constructs, *Information Management*, 36(1), 9-13.
- Eastlick, M.A. & Lotz, S. (1999). Profiling potential adopters and non-adopters of an interactive electronic, shopping medium. *International Journal of Retail and Distribution Management*, 26(6), 209-223.
- Eurotel International, (2004). What is GSM?. Retrieved March 15, 2007, from <http://www.eurotelgsm.com/Whatisgsm/home.htm>.
- Fishbein, M. & Ajzen, I. (1975). Belief, attitude, intention and behavior: an introduction to theory and research. *Addison-Wesley*.
- Gilbert, A.L. & Han, H. (2004). Understanding mobile data services adoption: Demography, attitudes or needs?, *Technological Forecasting and Social Change*, 72(3), 327-337.
- Green, P. & Srinivasan, V. (1978) Conjoint analysis in consumer research: Issues and outlook, *Journal of Consumer Research*, 5, 103-123.
- Grinter, R.E. & Eldridge, M. (2001). Y do tngrs luv 2 txt msg? K. Schmidt and V. Wilf. *Dordrecht: Kluwer Academic Publishers*, 219-238.
- GSM Association 2007 (2007). GSM - The wireless evolution, Retrieved March 20, 2007, from <http://www.gsmworld.com>.
- Herrmann, A., Huber, F. & Braunstein, C. (2000). Market-driven product and service design: Bridging the gap between customer needs, quality management, and customer satisfaction, *International Journal of Production Economics*, 66(1), 77-96.

- Hong, S., Tam, K. & Kim, J. (2006). Mobile data service fuels the desire for uniqueness, *Communication of the ACM*, 49(9), 89-94.
- Hsu, C., Lu, H., Hsu, H. (2006). Adoption of the mobile Internet: An empirical study of multimedia message service (MMS), *Omega*, 3(6), 715-726.
- Huber, J., Wittink, D., Fiedler, J. & Miller, R. (1991). An empirical comparison of ACA and full profile judgments, *Sawtooth Software Conference Proceedings, Ketchum, ID: Sawtooth Software*, 189-202.
- Hung, S., Ku, C. & Chang, C. (2003). Critical factors of wap services adoption: An empirical study, *Electronic Commerce Research and Applications*, 2(1), 42-60.
- Kakihara, M. & Sorensen, C. (2001). Expanding the 'mobility' concept, *Siggroun Bulletin*, 22(3), 33-37.
- Kallio, P. (2004). Emergence of wireless services, *VTT Publications, Espoo 2004*.
- Kargin, B. & Basoglu, N. (2006). Adoption factors of mobile services, *International Conference on Mobile Business (ICMB'06)*, 41, Copenhagen.
- Kaseniemi, E.L. (2003). Mobile messages: young people and a new communication culture, Tampere, *Tampere University Press*.
- Kleinrock, L. (1996). Nomadicity: anytime, anywhere in a disconnected world, *Mobile Networks and Applications*, 1(4), 351-357.
- Kleijnen, M. & K. de Ruyter. (2003). Factors influencing the adoption of mobile gaming services, *Mobile commerce: technology, theory, and applications*, Hershey, Pennsylvania, *Idea Group Publishing*, 202 – 217.
- Knutsen, L., Constantiou, I.D. & Damsgaard, J. (2005). Acceptance and perceptions of advanced mobile services: Alterations during a field study, *Proceedings of the International Conference on Mobile Business (ICMB'05)*, 326-332, Sydney.
- Lederer, A.L., Maupin, D.J., Sena, M.P., & Zhuang, Y. (2000). The technology acceptance model and the World Wide Web., *Decision Support Systems*, 29, 269-282.
- Legris, P., Ingham, J., Colletette, P. (2003). Why do people use information technology? A critical review of the technology acceptance model, *Information & Management*, 40, 191-204.
- Leung, L. & Wei, R. (2000). More than just talk on the move: Uses and gratifications of the cellular phone, *J&MC Quarterly*, 77, 308-320.
- Luce, R. D. & Tukey, J. W. (1964). Simultaneous conjoint measurement: a new type of fundamental measurement, *Journal of Mathematical Psychology*, 1, 1-27.



- Malhotra, Y. & Galletta, D. F., (1999). Extending the technology acceptance model to account for social influence: theoretical bases and empirical validation, *The 32<sup>nd</sup> Hawaii International Conference on System Sciences*, 1, Hawaii.
- Mallat, N., Rossi, M., Tuunainen, K. V. & Örne, A. (2006). The impact of use situation and mobility on the acceptance of mobile ticketing services, *Proceedings of the 39<sup>th</sup> Annual Hawaii International Conference on System Sciences*, 2, Hawaii.
- May, P. (2001). Mobile Commerce: opportunities, applications, and technologies of wireless business, *Cambridge University Press*.
- McGlynn, R.P., McGurk, D., Effland, V., Johll, N., & Harding, D. (2004) Brainstorming and task performance in groups constrained by evidence, *Organizational Behavior and Human Decision Processes*, 93(1), 5-87.
- Middleton, C. & Cukier, W. (2006). Is mobile email functional or dysfunctional? Two perspectives on mobile email usage, *European Journal of Information Systems*, 15, 252–260.
- Mennecke, B. and Strader, T. (2003). Mobile Commerce Technology, Theory and Applications. Hershey, Pennsylvania: *Idea Group*.
- MobileIN.com. (2006). Value-Added Services, Retrieved April 30, 2007, from <http://www.MobileIN.com>.
- Moore, G., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation, *Information Systems Research*, 2(3), 192–222.
- Neudorfer, R. (2004). Critical success factors for the management of innovative mobile business models, *Evolaris Research Lab*.
- Orme, Brayn (2003). Which conjoint method should I use?, *Sawtooth Software, Inc*.
- Osborn, A. F. (1963). Applied imagination: principles and procedures of creative problem-solving. (Third Revised Edition). *New York, NY: Charles Scribner's Sons*.
- Pagani, M. (2004). Determinants of adoption of third generation mobile multimedia services, *Journal of Interactive Marketing*, 18(3), 46-59.
- Pedersen, P.E., Nysveen, H. & Thorbjørnsen, H. (2003). Adoption of mobile services: Model development and cross-service study, *Norwegian School of Economics and Business Administration*. Retrieved September 30, 2006, from [http://ikt.hia.no/perep/cross\\_service\\_jams.pdf](http://ikt.hia.no/perep/cross_service_jams.pdf).
- Plouffe, C.R., Hulland, J.S. & Vandenbosh, M. (2001). Richness versus parsimony in modeling technology adoption decisions, understanding merchant adoption of a smart card-based payment system, *Information Systems Research*, 12, 208-222.

- Rau, P. P. & Chen, D. (2006). Effects of watermark and music on mobile message advertisements, *International Journal of Human-Computer Studies*, 64(9), 905-914.
- Reichheld, F. & Teal T. (1996). The loyalty effect. *Harvard Business School Press*, Boston.
- Roberts, K., James B. & Pick, G. (2004). Technology factors in corporate adoption mobile cell phones: A Case Study, *Proceedings of the 37<sup>th</sup> Annual Hawaii International Conference on System Sciences*, 9(9), Hawaii.
- Rogers, E. M. (1993). Diffusion of innovations, 3rd edition, New York/London.
- Teo, T.S & Pok, S.H. (2003). Adoption of WAP-enabled mobile phones among Internet users, *Omega*, 31, 483-498.
- Thong, James Y.L., Hong, S. & Tam, K.Y. (2006). The effects of post-adoption beliefs on the expectation-confirmation model for information technology continuance, *International Journal of Human-Computer Studies*, 64(9), 799-810.
- Unni, R. & Harmon, R. (2003). Location Based Services: models for strategy development in m-commerce, *PICMET '03*, Portland/USA.
- Turel, O. & Serenko, A. (2006). Satisfaction with mobile services in Canada: An empirical investigation, *Telecommunications Policy*, 30(5), 314-331.
- Unified Communications (2007), Mobile Value-Added-Services (VAS), Retrieved March 30, 2007, from <http://www.unifiedcomms.com/article.cfm?id=120>.
- Venkatesh V., Morris, M.G., Davis, G.B. & Davis, F.D. (2000). User acceptance of information technology: toward a unified view, *MIS Quarterly*, 27(3), 425-478.
- Zhu, W., & Fui-Hoon, N. (2003). Factors influencing adoption of mobile computing. In Managing e-commerce and mobile computing technologies, *IRM Press*, 260 – 271.
- Wikipedia.com (2007). Value Added Services, the Free Encyclopedia, Retrieved March 30, 2007, from <http://www.wikipedia.com>.

## APPENDICES

### APPENDIX A

#### Interview Questions (Turkish)

1. Teknolojiyi yakından takip eder misiniz ? Yeni çıkan bir teknolojiyi, ürünü ya da servisi hemen kullanır mısınız? Yoksa önce başkalarının kullanmasını mı beklersiniz?
2. Internet PC ya da cep telefonundan hangisi yoluyla girmeyi tercih edersiniz? Neden?
3. Mobil hizmet kullandınız mı? (Logo melodi, chat, haber paketi vb)
4. En çok kullandığınız mobil hizmet hangisidir? Ne kadar zamandır bu hizmet ya da servisi kullanıyorsunuz ? İlk kullandığınız mobil hizmeti hatırlıyor musunuz ?
5. Sizce bir hizmeti - servisi kullandıran en önemli özellik nedir ? Kullanım rasgele mi oluşuyor, yoksa bilinçli olarak, isteyerek, planlayarak mı kullanıyorsunuz ?
6. Kullandığınız bir lokasyon bazlı servis (LBS) var mıdır ? En çok beğendiğiniz özelliği nedir ?
7. Servisi kullanırken kendinizi rahat hissediyor musunuz?
8. Servis sizce faydalı bir servis midir? Kullanımı kolay mıdır?
9. LBS'in başka ne tür uygulamaları olmasını isterdiniz?
10. LBS'in şu özelliği de olsa daha iyi olurdu diyebileceğiniz bir özellik aklınıza geliyor mu?
11. Eğer belirtilmediyse, eczane, havadurumu ya da ekipmobil servislerini duydunuz mu? Kullandınız mı? Eğer kullandıysa, ne zaman, hangi şartlarda kullandınız?
12. Ekleme istedikleriniz?

### Interview Questions (English)

1. Do you follow technology closely? Do you use a new technology, product or service right after its launch or do you wait until others use and adopt it?
2. In the same medium, which do you prefer? The Internet over PC or mobile phone? Why?
3. Did you use any mobile services? (Logo Melody, Chat, News Package etc.)
4. Which mobile service do you use most? How long have you been using this service? Do you remember the first mobile service you have used?
5. What do you think is the most important feature of the mobile service that makes it popular? Does usage occur randomly, or consciously? Does it occur willingly and in a planned way?
6. Is there any location based services that you've used recently? What is the most favorite feature of this service? When and in which conditions and situations did you use it?
7. Do you feel comfortable using this service?
8. Do you think this service adds value to your life?
9. What other LBS applications or services would you like to use?
10. Is there any other new feature(s) you wish were offered by any LBS?
11. Any other comments?

## APPENDIX B

### Brainstorming Invitation Mail (Turkish)

Merhabalar,

Öncelikle, “Mobil Servisler” i kullanma etkenleri üzerine yapacağımız beyin fırtınası çalışmasına katılmayı kabul ettiğiniz için hepinize ayrı ayrı teşekkür ederim.

Çalışmanın yapılacağı tarih, yer ve saat bilgileri aşağıdaki gibidir.

Yer: Boğaziçi Üniversitesi Hisar Kampüs (Ekte hisar kampüsün yerini gösteren krokiyi bulabilirsiniz)

Tarih: 09.04.2007 Pazartesi

Saat: 19:00

Çalışmanın konusunu anlatan döküman ektedir. Çalışma ile ilgili sorularınız olursa, her zaman arayabilirsiniz.

Pazartesi akşamı görüşmek üzere,

Saygılarımla,

Banu Kargın

Turkcell İletişim Hizmetleri A.Ş.

Customer Analytics/Analysis

GSM: 532 210 2610

PSTN: 212 313 2154

## Brainstorming Invitation Mail (English)

Hello,

First of all, I would like to thank you for accepting my invitation to brainstorming session about factors affecting “Mobile Service” usage.

The session will be done in the following date, time and location:

Location: Boğaziçi University Hisar Campus (map is attached)

Date: April 9, 2007 Monday

Time: 7 pm

Attached document explains the topic. Please do not hesitate to call me if you have any questions.

Looking forward to seeing you on Monday

Best regards,

Banu Kargın

Turkcell İletişim Hizmetleri A.Ş.  
Customer Analytics/Analysis

GSM: 532 210 2610

PSTN: 212 313 2154

### Brainstorming Thanks E-Mail (Turkish)

Değerli katılımcılar,

Çalışmaya katkılarınızdan dolayı hepinize teşekkür ederim.

İyi günler, iyi çalışmalar dilerim,

Saygılarımla,  
Banu Kargın

Turkcell İletişim Hizmetleri A.Ş.  
Customer Analytics/Analysis  
GSM: 532 210 2610  
PSTN: 212 313 2154

### Brainstorming Thanks E-Mail (English)

Dear participants,

I would like to thank you for your contribution to my study.

Have a good day.

Regards,  
Banu Kargın

Turkcell İletişim Hizmetleri A.Ş.  
Customer Analytics/Analysis  
GSM: 532 210 2610  
PSTN: 212 313 2154

## Pictures Used in Brainstorming Session Study

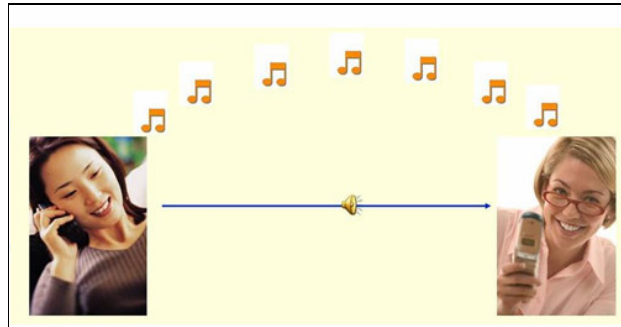


Fig. B.1. Ring back tone



Fig. B.2. Mobile games



Fig. B.3. Information-based services



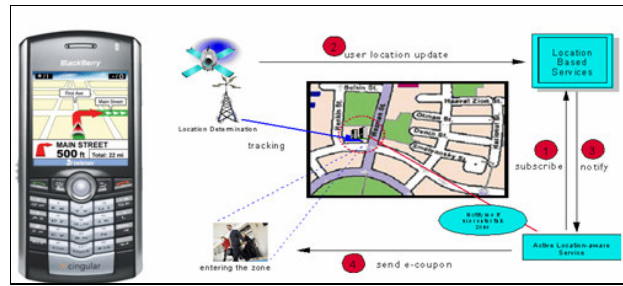


Fig. B.4. Location based services

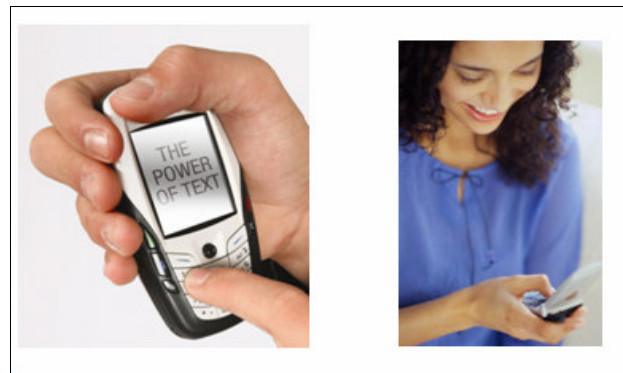


Fig. B.5. Short messaging service



Fig. B.6. Mobile marketing services

## APPENDIX C

### Expert Focus Group Questions (Turkish)

1. Bir mobil servis ya da ürünün yararlı ve etkin bir şekilde kullanılabilmesi için aşağıda listelenen özellikler sizce ne kadar önemlidir? Lütfen E kolonunda (yeşil kolon) ilgili yerde özellikleri 1'den 10'a kadar sıralayınız (1 en önemli, 10 en önemsiz olacak şekilde). Yorumunuz var ise, yorum kolonuna yazabilirsiniz.

Özellikler	Anlam	(1 - En Önemli - 10 En Önemsiz)	Yorum	Açıklama
Content	İçerik			Servisin sağladığı içeriğin kalitesi, miktarı, zamanında ve doğru gelmesi, içerik sağlayıcı gibi özellikleri içerir
Mobility	Mobilite			Servisler sayesinde zamandan ve mekandan bağımsız olarak istenilen bilgilere ulaşılma. Ev ya da ofis dışındayken, otobüste ya da yolda yürürken, cep telefonu üzerinden hava durumunu öğrenebilme, oyun oynayabilme gibi düşünülebilir
Enjoyment	Zevk alma, eğlenme			Servisin zevk vermesi, eğlendirmesi, servisi kullanırken haz duyma
Personalization	Kişiselleştirme, Uyarılma			Kullanıcının kendi zevk ve isteğine göre servisi kişiselleştirip uyarlayabilmesi
Cost	Fiyat			Servisin fiyatı, birim ya da paket fiyatı
Social Influences	Sosyal Etkenler			Dış etkenler, reklamlar, WOM, farklılaşma isteği, imaj yaratma isteği gibi sosyal çevremizden gelen etkenler
User Characteristics	Kullanıcı Karakteristikleri			Kullanıcının alışkanlıkları, tercihleri, deneyimleri
Technological Factors	Teknolojik Etkenler			Servisin fonksiyonları, hızı, uygunluğu (convenience), kolaylığı
Visual Factors	Görsel Etkenler			Görsel etkenler, ekranın boyutu, rengi, çözünürlüğü, butonlar
Demographics	Kullanıcı Demografikleri			Kullanıcının yaşı, eğitimi, cinsiyeti gibi profil özellikleri

Fig. C.1 Expert focus group study – question 1

2. Bir mobil servis ya da ürünün yararlı ve etkin bir şekilde kullanılabilmesi için aşağıda listelenen özelliklerden size önemli gelen 6 adet özelliği lütfen ilgili kutuya "x" koyarak seçiniz.

Özellikler	Anlam	x	Yorum	Açıklama
<b>Content</b>	İçerik			Servisin sağladığı içeriğin kalitesi, miktarı, zamanında ve doğru gelmesi, içerik sağlayıcı
Content Correctness	İçeriğin doğru olması	<input type="checkbox"/>		Servisin sağladığı içeriğin doğru olması
Content Delivery Time	İçerik ulaşma zamanı	<input type="checkbox"/>		Servisin sağladığı içeriğin müşteriye ulaşma zamanı, müşterinin servise ulaşmak istediğinde servisin geri dönüş süresi gibi de düşünülebilir
Content Quality	İçerik Kalitesi	<input type="checkbox"/>		Servisin sağladığı içeriğin kalitesi
Content Understandability	İçeriğin Anlaşılır Olması	<input type="checkbox"/>		Servisin sağladığı içeriğin kolayca anlaşılabilmesi, anlaşılır olması
Content Provider	İçerik Sağlayıcısı	<input type="checkbox"/>		Servise içerik sağlayan firmanın kim olduğu, sektördeki yeri ve önemi
Content Quantity	İçerik Miktarı	<input type="checkbox"/>		Servis alırken alınan içerik adedi, içeriğin boyutu (Çok sık içerik alınması, içeriğin boyutunun cep telefonunuza uygunluğu gibi özellikler)
<b>Personalization</b>	Kişiselleştirme, Uyarılma	<input type="checkbox"/>		Kullanıcının kendi zevk ve isteğine göre servisi kişiselleştirip uyarlayabilmesi
<b>Cost</b>	Fiyat	<input type="checkbox"/>		Servisin fiyatı, birim ya da paket fiyatı
<b>Enjoyment</b>	Zevk alma, eğlenme	<input type="checkbox"/>		Servisin zevk vermesi, eğlendirmesi
<b>Mobility</b>	Mobilite	<input type="checkbox"/>		Servisler sayesinde mekandan bağımsız olarak istenilen bilgilere ulaşılabilir. Ev ya da ofis dışındayken, otobüste ya da yolda yürürken, cep telefonu üzerinden hava durumunu öğrenebilme, ovun oynatabilme gibi düşünülebilir
<b>Social Influences</b>	Sosyal Etkiler			Dış etkenler, reklamlar, WOM, farklılaşma isteği, imaj yaratma isteği
External Influences	Dıştan Gelen Etkiler	<input type="checkbox"/>		Dış etkenler (reklamlar ya da ürünü daha önce kullananlar)
Differentiation (Image)	Farklılaşma (İmaj)	<input type="checkbox"/>		Kullanıcıların etraflarındaki insanlara kendilerini farklı, ayrıcalıklı ve öncü gösterme isteği
WOM	Word of Mouth	<input type="checkbox"/>		Ağızdan ağıza servisin bilinirliğinin öğrenilebilmesi
<b>User Characteristics</b>	Kullanıcı Karakteristikleri			Kullanıcının alışkanlıkları, tercihleri, deneyimleri
Habits	Alışkanlıklar	<input type="checkbox"/>		Kullanıcının mevcut alışkanlıkları
Experiences	Deneyimler	<input type="checkbox"/>		Kullanıcının benzer servis ya da ürün ile ilgili geçmiş deneyimleri
Innovativeness	Yenilikçilik	<input type="checkbox"/>		Kullanıcının yenilikçi olması, yeni fikirlerle açık olma özelliği
<b>Technological Factors</b>	Teknolojik Etkiler			Servise, teknolojinin sağladığı fonksiyonlar, uygunluk, kolay kullanılabilmesi, hız ya da ulaşılabilirlik gibi etkenler
Functionality	Fonksiyonallık	<input type="checkbox"/>		Servisin fonksiyonallığı, servisin sağlandığı ortamdaki fonksiyonlar (cep telefonunun bluetooth, camera, MMS, SMS gibi özellikleri)
Speed & Memory	Hız ve Hafıza	<input type="checkbox"/>		Servisin kullanıcıya cevap verme hızı ile servisin sağlandığı ortamdaki aracın (cep telefonunun) hızı ve hafızası
Simplicity	Kolaylık	<input type="checkbox"/>		Servisin ve servisin sağlandığı ortamın kolay olması, kolay kullanılabilmesi
<b>Visual Factors</b>	Görsel Etkiler			Servisin sağladığı ortamdaki ekran boyutu, renkler, çözünürlük, butonların yerleri gibi etkenler
Screen Size	Ekran Boyutu	<input type="checkbox"/>		Servisin sağlandığı ortamın (çoğunlukla cep telefonu) ekran boyutu
Color Resolution	Renk Çözünürlüğü	<input type="checkbox"/>		Servisin sağlandığı ortamın (çoğunlukla cep telefonu) ekranının renk çözünürlüğü
Navigation Buttons	Navigasyon Butonları	<input type="checkbox"/>		Servisin sağlandığı ortamın (çoğunlukla cep telefonu) ekranının navigasyon butonlarının yerleri
Menu Types	Menu Tipleri	<input type="checkbox"/>		Servisin sağlandığı ortamdaki menü tipleri
Design	Tasarım	<input type="checkbox"/>		Servisin sağladığı ortamın (cep telefonunun) tasarımı
<b>Demographics</b>	Demografikler			Kullanıcı Demografikleri
Age	Yaş	<input type="checkbox"/>		Kullanıcı Yaşı
Gender	Cinsiyet	<input type="checkbox"/>		Kullanıcı Cinsiyeti
Education	Eğitim	<input type="checkbox"/>		Kullanıcının Eğitim Seviyesi

Fig. C.2 Expert focus group study – question2

## Expert Focus Group Mail (Turkish)

Merhabalar,

Boğaziçi Üniversitesi Yönetim Bilişim Sistemleri öğretim üyesi A. Nuri Başoğlu yönetiminde "Factors Affecting the Adoption of Mobile Services" konulu tez çalışmasını yürütmekteyim. Tez kapsamında fokus grup çalışması yapmaktayım. Bu çalışma mail ortamında yapılacaktır.

Sizlerden ricam, Mobil Servisleri kullanma etkenleri üzerine yaptığım tez çalışmam için ekteki dokümanda yer alan 2 soruyu cevaplamanız. Dosyada 2 ayrı worksheet vardır.

Katkılarınız için teşekkür ederim, iyi çalışmalar.

Teşekkürler,

Banu Kargın  
Boğaziçi Üniversitesi  
Management Information Systems  
Master Öğrencisi

## Expert Focus Group Mail (Turkish)

Hello,

I am working on a master's thesis called "Factors Affecting the Adoption of Mobile Services" and supervised by Associate Prof. Nuri Başoğlu from Boğaziçi University, Management Information Systems. I will be making a focus group study which will be done via e-mail.

I would like to kindly ask you to answer the two questions below about factors affecting mobile service usage. There are two worksheets in the attached document.

I would like to thank you in advance for your contributions.

Best regards,

Banu Kargın  
Boğaziçi University  
Management Information Systems  
Masters Student

## APPENDIX D

### Experimental Study Questionnaire (English)

Table D.1 Questionnaire in English

Construct	Items
Attitude	It is a good idea to use this service I want to use this service
Intention	I do not think of using this service I am planning to use this service I advise other people to use this service I will use this service or a similar service in the near future
Ease of Use	It is difficult to use this service
Usefulness	I need to use this service This service makes my life easy This service will provide extra time for my life I find this service as useful as the Internet This service makes me get information wherever I am, out of office or home.
Satisfaction	I am satisfied with this service
Personalization	It is important to be able to personalize service features according to my needs
Cost	The price of this service influences my decision about use I would use this service more if its price were lower
Visual Factors	Screen size, visual quality and key layout affect the usage of mobile services
Service Speed	Speed of service is an important factor
Content	Content of this service is high-quality The contents of this service is sufficient
Enjoyment	Using this service is enjoyable
Image	Using this service makes me different from others
Experience	I am experienced in using mobile services
Innovativeness	Before using new mobile services, I want to see others' experiences
Mobility	Being out of office and home is an important reason to use mobile services.
Internal Influences	People around me affect my decisions to use mobile services.
External Influences	Mobile service advertisements affect my usage decision

## Questionnaire (Turkish)

Table D.2 Questionnaire (Turkish)

Construct	Items
Attitude	Bu servisi kullanmak bence iyi bir fikir. Bu servisi kullanmayı isterim
Intention	Bu servisi kullanmayı düşünmem Bu servisi kullanmayı planlıyorum Bu servisi kullanmayı insanlara tavsiye ediyorum Bu servis veya benzerini yakın zamanda kullanacağım
Ease of Use	Bu servisi açık ve anlaşılır buldum Bu servisi kullanmak zordur
Usefulness	Bu servisi kullanmaya ihtiyacım var Bu servis hayatıma kolaylık getirecektir Bu servis bana zaman kazandıracaktır Bu servisin internet kadar yararlı olduğunu düşünüyorum Bu servis sayesinde ev ya da ofis dışındayken de bilgilenebiliyorum
Satisfaction	Bu servisi kullanmaktan memnunum
Personalization	Bu servisin bazı özelliklerini kendime göre değiştirebilmem benim için önemlidir
Cost	Servisin ücreti kullanma kararımı etkiler
Image	Bu servisi kullanmam beni çevremdeki kişilerden farklı yapıyor
Visual Factors	Ekran boyutu, görüntü kalitesi ve tuş düzeni servisi kullanma kolaylığını etkiliyor
Service Speed	Bu servisin sağladığı içeriklerin zamanında geldiğini düşünüyorum
Content	Bu servisten gelen içeriklerin kaliteli olduğunu düşünüyorum Bu servisin sağladığı içeriklerin yeterli olduğunu düşünüyorum
Enjoyment	Bu servisi kullanmak eğlencelidir
Image	Bu servisi kullanmam beni çevremdeki kişilerden farklı yapıyor
Experience	Mobil servislerin kullanımı konusunda tecrübeliyim
Innovativeness	Yeni ürünleri ve servisleri kullanmadan önce başkalarının kullanmış olmasını tercih ederim
Mobility	Sürekli ev ve ofis dışında olmam bu servisi kullanmamda çok önemli bir etkidir
Internal Influences	Mobil servislerin varlığını çevremdeki kişilerden öğrendim
External Influences	Servisin reklamlarının yapılması kullanma kararımı etkiler

## E-Mail of Experimental Study (Turkish)

Merhabalar,

Boğaziçi Üniversitesi Yönetim Bilişim Sistemleri öğretim üyesi A. Nuri Başoğlu yönetiminde “Factors Affecting the Adoption of Mobile Services” konulu tez çalışmasını yürütmekteyim.

Mobil servisleri kullanmayı etkileyen faktörleri ortaya çıkarmak için deney çalışması yapmaktayım (çalışmada Eczane Servisi örnek alınmıştır)

Ekteki çalışmada sorulan soruları cevaplamanızı ve dosyayı mail yoluyla bana göndermenizi rica ediyorum. Çalışmayı başkalarına yönlendirirseniz sevinirim.

Katkılarınız için şimdiden çok teşekkür ederim

Teşekkürler,  
Banu Kargın

Not: Eğer excelinizin macro security’si yüksek ise, exceli acabilmek için ”enable macros” demeniz gerekiyor. Macro ayarları, Tools →Macro → Security ayarlarından yapılmaktadır. ”Low” ya da ”düşük” yaparsanız problem yaşamazsınız.

## E-Mail of Experimental Study (English)

Hello,

I am working on a master’s thesis called as “Factors Affecting the Adoption of Mobile Services” and supervised by Associate Prof. Nuri Başoğlu from Boğaziçi University Management Information Systems.

I am making an experimental study to find out the factors affecting mobile service usage. (Mobile Pharmacy Service is given as an example.)

I would like to kindly ask you to answer the questions in the attached survey and send it to me via e-mail. I would be very pleased if you could forward it to other people.

Thanks for your contribution in advance.


Best regards,  
Banu Kargın

Note: If your MS Excel application has a macro security level of “High”, you should click “Enable Macros” button while opening this document. From Tools →Macro → Security, you can change the setting to “Low” in order not to have any problems



## Main Screens of Experimental Study

**MOBİL SERVİS VE UYGULAMALARINI KULLANMAYI ETKİLEYEN FAKTÖRLER ÇALIŞMASI**

  
Boğaziçi Üniversitesi  
Yönetim Bilişim Sistemleri Bölümü

Boğaziçi Üniversitesi, Yönetim Bilişim Sistemleri Bölümü öğretim üyesi A. Nuri Başoğlu yönetiminde **"Factors Affecting the Adoption of Mobile Services"** konulu tez çalışmasını yürütüyoruz. Bu çerçevede hazırlamış olduğumuz çalışmaya katılmanız değerli bir katkı sağlayacaktır.

Değerlendirme süresi yaklaşık 10-15 dakikadır. Kimlik bilgileriniz istenmemektedir.

Lütfen, seçiminizi uygun kutuya X işareti koyarak belirtiniz.

Değerli zamanınızı ayırdığınız için teşekkür ederiz  
Banu Kargın

**Cinsiyetiniz:**

Kadın	
Erkek	

**Yaşınız:**

20'nin altında	
21 - 25	
26 - 30	
31 - 40	
41 - 50	
51 ve üstü	

**Eğitim durumunuz:**

Hiç almadım	
İlkokul mezunu	
Ortaokul mezunu	
Lise mezunu	
Üniversite öğrencisi	
Üniversite mezunu	
Yüksek Lisans ve üzeri	

**Mobil Servis tecrübe yılınız:**

--	--

**DENEYE BAŞLA**

Fig. D.1 Experimental study – main screen-I

#### MOBİL SERVİS VE UYGULAMALARINI KULLANMAYI ETKİLEYEN FAKTÖRLER ÇALIŞMASI

Bulunduğu noktaya en yakın eczaneyi bulmaya çalışan bir kişi cep telefonu aracılığı ile bu ihtiyacını karşılamak ister. Bu amaçla "Eczane" yazar, ve 1111'e gönderir. Servisin verdiği hizmet, kullanılan servis özelliklerine göre değişmektedir.

< - Giriş Sayfasına  
Dön









##### Servis Özelliklerin Açıklaması

Özellik	Açıklama
Fiyat	Servisin fiyatı, birim ya da paket fiyatı (Pahalı - Ucuz)
İçerik	İçerik kısa bir mesaj (SMS), detaylı uzun bir mesaj ya da MMS (Mesaj + Kroki) yoluyla gelmektedir
Ekran Boyutu	Servisin sağlandığı ortamın (çoğunlukla cep telefonu) ekran boyutu (Büyük Ekran - Küçük Ekran)
Kişiselleştirme	Kullanıcının kendi zevk ve isteğine göre servisi kişiselleştirip uyarlayabilmesi (Var - Yok)
Hız	Servisin kullanıcıya cevap verme hızı (Hızlı - Yavaş)

\* Lütfen aşağıdaki 8 farklı senaryodan, 1 en çok kullanmayı tercih edeceğinizi, 8 en az kullanmayı tercih edeceğiniz olacak şekilde ve ilgili özelliklerini göz önünde bulundurarak (sahip oldukları/olmadıkları) sıralayınız.

\* **Sırayı değiştirmek için;** a) "Seç" düğmesini seçin, b) Sağ taraftaki sıra değiştirme düğmesi ile tercih ettiğiniz sıraya (SıraNo) getirin.

\* Ayrıntı düğmesi ile senaryonun detayına ulaşabilirsiniz

SıraNo	Hız	Ücret	Ekran	Diğer Özellik	SıraNo	Hız	Ücret	Ekran	Diğer Özellik
1	a Yavaş	Pahalı	 Küçük	Kişiselleştirme Detaylı SMS	5	e Hızlı	Pahalı	 Büyük	MMS Kişiselleştirme
2	b Yavaş	Ucuz	 Küçük	MMS	6	f Hızlı	Pahalı	 Küçük	SMS
3	c Hızlı	Ucuz	 Büyük	SMS Kişiselleştirme	7	g Yavaş	Pahalı	 Büyük	SMS
4	d Hızlı	Ucuz	 Büyük	Detaylı SMS	8	h Hızlı	Ucuz	 Küçük	SMS Kişiselleştirme

Sıra  
Değiştirme  
Düğmesi



ANKETE DEVAM

Fig. D.2 Experimental study – main screen - II

Lütfen, cep telefonu üzerinden eczane bulma servisini düşünerek aşağıdaki soruları yanıtlayınız. Seçiminizi uygun kutuya sayıların yerlerine X işareti koyarak belirtiniz.

	Katılmıyorum	Kısmen Katılmıyorum	Kısmen Katılıyorum	Katılıyorum
1 Mobil servislerin kullanımı konusunda tecrübeliyim	1	2	3	4
2 Benim için eczane servisi gibi mobil servisleri tanımak ve denemek çok çekicidir	1	2	3	4
4 Sürekli ev ve ofis dışında olmam bu servisi kullanmamda çok önemli bir etkidir	1	2	3	4
5 Yeni ürünleri ve servisleri kullanmadan önce başkalarının kullanmış olmasını tercih ederim	1	2	3	4
6 Çevremdeki insanların mobil servisleri kullanıyor olması beni etkiler	1	2	3	4
7 Servisin reklamlarının yapılması kullanma kararımı etkiler	1	2	3	4
8 Mobil servislerin varlığını çevremdeki kişilerden öğrendim	1	2	3	4
9 Bu servisin internet kadar yararlı olduğunu düşünüyorum	1	2	3	4
10 Bu servis sayesinde ev ya da ofis dışındayken de bilgilenebiliyorum	1	2	3	4
12 Bu servisi kullanmam beni çevremdeki kişilerden farklı yapıyor	1	2	3	4
13 Servisin ücreti kullanma kararımı etkiler	1	2	3	4
14 Fiyatlar daha ucuz olursa bu servisi daha fazla kullanırım	1	2	3	4
16 Bu servis beni eğlendiriyor	1	2	3	4
17 Bu servisten gelen içeriklerin kaliteli olduğunu düşünüyorum	1	2	3	4
18 Bu servisin sağladığı içeriklerin yeterli olduğunu düşünüyorum	1	2	3	4
19 Bu servisin sağladığı içeriklerin zamanında geldiğini düşünüyorum	1	2	3	4
20 Bu servisin bazı özelliklerini kendime göre değiştirebilmem benim için önemlidir	1	2	3	4
22 Ekran boyutu, görüntü kalitesi ve tuş düzeni servisi kullanma kolaylığını etkiliyor	1	2	3	4
23 Bu servisi kullanmaktan memnunum	1	2	3	4

Aşağıdaki soruları **Hızlı, Pahalı, Büyük Ekran, Kişiselleştirme, MMS** özellikleri olan Senaryo E'yi dikkate alarak cevaplayınız. Sizin için uygun kutuya X işareti koyunuz.

[Senaryo E'ye tekrar bakmak için tıklayınız.](#)

	Katılmıyorum	Kısmen Katılmıyorum	Kısmen Katılıyorum	Katılıyorum
1 Bu servis hayatıma kolaylık getirecektir.	1	2	3	4
2 Bu servis bana zaman kazandıracaktır.	1	2	3	4
3 Bu servisi kullanmaya ihtiyacım var.	1	2	3	4
4 Bu servisi açık ve anlaşılır buldum.	1	2	3	4
5 Bu servisi kullanmak zordur.	1	2	3	4
6 Bu servisi kullanmayı isterim	1	2	3	4
7 Bu servisi kullanmak bence iyi bir fikir.	1	2	3	4
8 Bu servisi kullanmayı düşünmem.	1	2	3	4
9 Bu servisi kullanmayı planlıyorum.	1	2	3	4
10 Bu servisi kullanmayı insanlara tavsiye ediyorum.	1	2	3	4
11 Bu servis veya benzerini yakın zamanda kullanacağım.	1	2	3	4

Zaman ayırdığınız için teşekkür ederiz. Lütfen, dosyayı mail yolu ile banu.kargin@turkcell.com.tr adresine geri gönderiniz

Fig. D.3 Experimental study – main screen - III

Table D.3 Steps of Alternatives


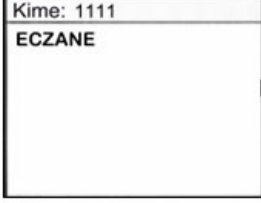
Alternatives	Attributes	Step 1	Step 2	Step 3	Step 4
Scenario 1	Slow, Expensive, Small-screen, Personalization, SMS	User writes a message from his small-screen-size phone "PHARMACY" to the number 1111 to learn the nearest pharmacy.	Answer is received via SMS after 8 minutes. User gets bored. Message is long thus needs scrolling in a small-screen-size phone.	If the user wants, he/she can request personalized messages such as, if he has a car, driving instructions are provided. If not, walking path is provided.	The service is expensive and user is surprised to see such a high price on the bill. The price of service is 1 YTL
Scenario 2	Slow, Inexpensive, Small-Screen, MMS	User writes a message from his small-screen-size phone "PHARMACY" to the number 1111 to learn the nearest pharmacy.	Answer is received via MMS after 8 minutes. The message contains a colored map of the nearest pharmacy but since the screen is small, it cannot be seen clearly. User gets bored because he got the message in 8 minutes.	User cannot ask for personalized messages.	The price is not high and user is pleased to see a reasonable amount on the bill. The price of service is 0.25 YTL.
Scenario 3	Fast, Inexpensive, Large-Screen, Personalization, MMS	User writes a message from his small-screen-size phone "PHARMACY" to the number 1111 to learn the nearest pharmacy.	Answer is received via MMS quickly in one minute. The message contains a colored map of nearest pharmacy and it can be seen clearly in the big screen.	If the user wants, he/she can request personalized messages such as, if he has a car, driving instructions are provided. If not, walking path is provided.	The price is not high and user is pleased to see a reasonable amount on the bill. The price of service is 0.25 YTL.
Scenario 4	Fast, Inexpensive, Large-Screen, SMS	User writes a message from his small-screen-size phone "PHARMACY" to the number 1111 to learn the nearest pharmacy.	Answer is received via SMS quickly in one minute. Message is long but no need to scroll.	User cannot ask for personalized messages.	The price is not high and user is pleased to see a reasonable amount on the bill. The price of service is 0.25 YTL.

Alternatives	Attributes	Step 1	Step 2	Step 3	Step 4
Scenario 5	Fast, Expensive, Large-Screen, Personalization, MMS	User writes a message from his small-screen-size phone "PHARMACY" to the number 1111 to learn the nearest pharmacy.	Answer is received via MMS in a minute. The message contains a colored map of nearest pharmacy and it can be seen clearly in the big screen.	If the user wants, he/she can request personalized messages such as, if he has a car, driving instructions are provided. If not, walking path is provided.	The service is expensive and user is surprised to see such a high price on the bill.
Scenario 6	Fast, Expensive, Large-Screen, SMS	User writes a message from his small-screen-size phone "PHARMACY" to the number 1111 to learn the nearest pharmacy.	Answer is received via SMS quickly in one minute. Message is long but no need to scroll.	User cannot ask for personalized messages.	The service is expensive and user is surprised to see such a high price on the bill. The price of service is 1 YTL
Scenario 7	Slow, Expensive, Large-screen, SMS	User writes a message from his small-screen-size phone "PHARMACY" to the number 1111 to learn the nearest pharmacy.	Answer is received via SMS after 8 minutes. User gets bored. Message is long but no need to scroll.	User cannot ask for personalized messages.	The service is expensive and user is surprised to see such a high price on the bill. The price of service is 1 YTL
Scenario 8	Fast, Inexpensive, Small Screen, Personalization, SMS	User writes a message from his small-screen-size phone "PHARMACY" to the number 1111 to learn the nearest pharmacy.	Answer is received via SMS quickly in one minute. Message is long but no need to scroll.	If the user wants, he/she can request personalized messages such as, if he has a car, driving instructions are provided. If not, walking path is provided.	The service is expensive and user is surprised to see such a high price on the bill. The price of service is 1 YTL

## Screens of Product Alternatives of Experimental Study



**SENARYO - A**

**Adım1:** Kullanıcı, küçük ekranlı telefonundan en yakın eczaneyi sorgular (Eczane yazar, 1111'e gönderir)


[<- Geriye Dön](#)

**Adım2:** Cevap uzun bir SMS ile 8dk. sonra geri gelir. Kullanıcı, cevabı beklemekten sıkılmıştır. Gelen mesaj, ekran küçük olduğu için tek bir seferde görüntülenemez. Kullanıcının mesajda aşağı doğru ilerlemesi gerekir

**Adım3:** Kullanıcı isterse, kendi kişisel bilgilerine göre, kişiselleştirilmiş mesaj isteyebilir. Arabası var ise, araba yolu, yok ise, yürüme yolu tarif edilebilir

**Adım4:** Ay sonu fatura gelince, kullanıcı çok şaşırır. Servisin bu kadar pahalı olduğuna inanamaz. Servisin bir kere kullanım ücreti 1 YTL'dir



Personalization

Fig. D.4 Experimental study – scenario-A's screen shot

**SENARYO - B**

**Adım1:** Kullanıcı, küçük ekranlı telefonundan en yakın eczaneyi sorgular (Eczane yazar 1111'e gönderir)




[<- Geriye Dön](#)

**Adım2:** Cevap MMS ile 8dk. sonra gelir. MMS'de eczanelerin yerlerini kuşbakışı gösteren kroki ile telefonlarını gösteren text mesaj yer almaktadır. Ekran küçük olduğu için görüntü net değildir. Cevap uzun sürede geldiği için kullanıcı





**Adım3:** Kullanıcı, kendi kişisel bilgilerine göre, kişiselleştirilmiş mesaj isteyemez



Personalization

Fig. D.5 Experimental study – scenario-B's screen-shot

### SENARYO - C

**Adım1:** Kullanıcı büyük ekranlı telefonundan en yakın eczaneyi sorgular (Eczane yazar 1111'e



Kime: 1111
ECZANE

<- Geriye Dön

**Adım2:** Cevap uzun bir mesaj ile 1 dk. sonra gelir. Cevap çok hızlı gelmiştir. Kullanıcı hemen sonuca ulaşabilmiştir



Kimden: 2737
Beyoglu: TEPEBASİ
02123553555;
Zumrutevler:İSTIKLAL
02125657543;
Asmalimescit:YENİ
02122438061

**Adım3:** Kullanıcı isterse, kendi kişisel bilgilerine göre, kişiselleştirilmiş mesaj isteyebilir. Kullanıcının tercihi göre, araba yolu ya da yürüme yolu tarif edilebilir

Personalization

**Adım4:** Ay sonu fatura gelince, müşteri çok memnundur. Servis kullanımı bütçesini etkilememiştir. Servisin bir kere kullanım ücreti 25 kuruş'tur

CHEAPER than  
CHEAPER

<- Geriye Dön

Fig. D.6 Experimental study – scenario-C's screen-shot

### SENARYO - D

**Adım1:** Kullanıcı, büyük ekranlı telefonundan en yakın eczaneyi sorgular (Eczane yazar 1111'e gönderir)



Kime: 1111
ECZANE

<- Geriye Dön

**Adım2:** Cevap uzun bir mesaj ile 1 dk. sonra gelir. Cevap çok hızlı gelmiştir. Kullanıcı hemen sonuca ulaşabilmiştir



Kimden: 2737
Su an size en yakın eczaneler:
Beyoglu: TEPEBASİ Eczanesi
Tel No: 02123553555;
Zumrutevler: İSTIKLAL
Eczanesi Tel No: 02125657543;
Asmalimescit: YENİ
Eczanesi Tel No: 02122438061
Daha detaylı bilgi için eczanenin ismini yazıp 1111'e gönderin.

**Adım3:** Kullanıcı, kendi kişisel bilgilerine göre, kişiselleştirilmiş mesaj isteyemez

~~Personalization~~

**Adım4:** Ay sonu fatura gelince, müşteri çok memnundur. Servis kullanımı bütçesini etkilememiştir. Servisin bir kere kullanım ücreti 25 kuruş'tur

CHEAPER than  
CHEAPER

Fig. D.7 Experimental study – Scenario-D's screen-shot

### SENARYO - E

**Adım1:** Kullanıcı, büyük ekranlı telefonundan en yakın eczaneyi sorgular (Eczane yazar 1111'e gönderir)



Kime: 1111  
ECZANE

<- Geriye Dön

**Adım2:** Cevap MMS ile 1 dk. sonra gelir. MMS'de eczanelerin yerlerini kuşbakışı gösteren kroki ile telefonlarını gösteren text mesaj yer almaktadır. Cevap çok hızlı gelmiştir. Kullanıcı hemen sonuca ulaşabilmiştir



Kimden: 2737  
Su an size en yakın eczaneler:  
Beyoglu: TEPEBASİ Eczanesi  
Tel No: 02123553555;  
Zumrutevler: ISTIKLAL  
Eczanesi Tel No: 02125657543;  
Asmalimescit: YENİ  
Eczanesi Tel No: 02122438061  
Bir sonraki ekranda eczaneleri  
kroki üzerinde görebilirsiniz.

Kimden: 2377  
• TEPEBASİ Eczanesi  
• YENİ Eczanesi  
• ISTIKLAL Eczanesi

**Adım3:** Kullanıcı isterse, kendi kişisel bilgilerine göre, kişiselleştirilmiş mesaj isteyebilir. Arabası var ise, araba yolu, yok ise, yürüme yolu tarif edilebilir

Personalization

**Adım4:** Ay sonu fatura gelince, müşteri çok şaşırır. Servisin bu kadar pahalı olduğuna inanamaz. Servisin bir kere kullanım ücreti 1 YTL'dir



Fig. D.8 Experimental study – scenario-E's screen shot

### SENARYO - F

**Adım1:** Kullanıcı, küçük ekranlı telefonundan en yakın eczaneyi sorgular (Eczane yazar 1111'e gönderir)



Kime: 1111  
ECZANE

<- Geriye Dön

**Adım2:** Cevap kısa bir mesaj (SMS) ile 1dk. sonra gelir. Cevap çok hızlı gelmiştir. Kullanıcı hemen sonuca ulaşabilmiştir



Kimden: 2737  
Beyoglu: TEPEBASİ  
02123553555;  
Zumrutevler: ISTIKLAL  
02125657543;  
Asmalimescit: YENİ  
02122438061

**Adım3:** Kullanıcı, kendi kişisel bilgilerine göre, kişiselleştirilmiş mesaj isteyemez

~~Personalization~~

**Adım4:** Ay sonu fatura gelince, müşteri çok şaşırır. Servisin bu kadar pahalı olduğuna inanamaz. Servisin bir kere kullanım ücreti 1 YTL'dir



Fig. D.9 Experimental study – scenario-F's screen shot



### SENARYO - G

**Adım1:** Kullanıcı, büyük ekranlı telefonundan en yakın eczaneyi sorgular (Eczane yazar 1111'e gönderir)



Kime: 1111
ECZANE

<- Geriye Dön

**Adım2:** Cevap kısa bir mesaj (SMS) ile 8dk. sonra gelir. Kullanıcı beklemekten sıkılmıştır



Kimden: 2737
Beyoglu: TEPEBASI 02123553555; Zumrutevler:ISTIKLAL 02125657543; Asmalimescit:YENI 02122438061

**Adım3:** Kullanıcı, kendi kişisel bilgilerine göre, kişiselleştirilmiş mesaj isteyemez



**Adım4:** Ay sonu fatura gelince, müşteri çok şaşırır. Servisin bu kadar pahalı olduğuna inanamaz. Servisin bir kere kullanım ücreti 1 YTL'dir



Fig. D.10 Experimental study – scenario-G's screen shot

### SENARYO - H

**Adım1:** Kullanıcı, küçük ekranlı telefonundan en yakın eczaneyi sorgular (Eczane yazar 1111'e gönderir)



Kime: 1111
ECZANE

<- Geriye Dön

**Adım2:** Cevap kısa bir mesaj (SMS) ile 1dk. sonra gelir. Cevap çok hızlı gelmiştir. Kullanıcı hemen sonuca ulaşabilmiştir



Kimden: 2737
Beyoglu: TEPEBASI 02123553555; Zumrutevler:ISTIKLAL 02125657543; Asmalimescit:YENI 02122438061

**Adım3:** Kullanıcı isterse, kendi kişisel bilgilerine göre, kişiselleştirilmiş mesaj isteyebilir. Kullanıcının tercihi göre, araba yolu ya da yürüme yolu tarif edilebilir

Personalization

**Adım4:** Ay sonu fatura gelince, müşteri çok memnundur. Servis kullanımı bütçesini etkilememiştir. Servisin bir kere kullanım ücreti 25 kuruştur



Fig. D.11 Experimental study – scenario-H's screen shot

## APPENDIX E

### Cluster Analysis Results

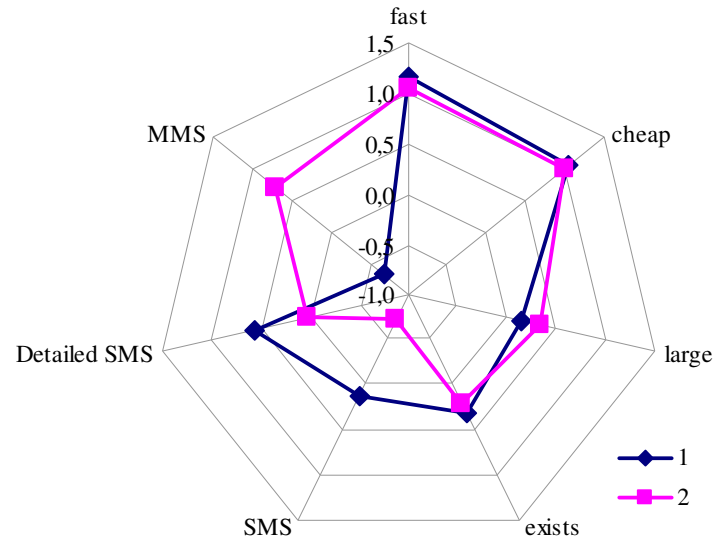


Fig. E.1 Cluster Analysis with 2 clusters (service attributes)

Table E.1 Results of Cluster with 2 Samples (Service Attributes)

Attribute	Level	SMS	MMS
		Addict (1)	Addict (2)
Speed	fast	1.17	1.05
Cost	inexpensive	1.05	1.00
Screen	large	0.17	0.34
Personalization	exists	0.30	0.19
Content	SMS	0.11	-0.72
	Detailed	0.57	0.03
Content	SMS		
Content	MMS	-0.68	0.69

Table E.2 Number of Cases in Clusters (Service Attributes)

Clusters	Number of Cases
SMS Addict	47
MMS Addict	55

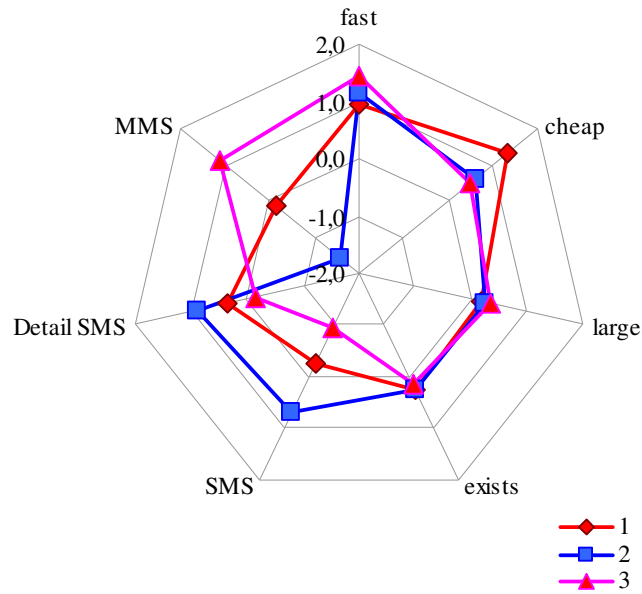


Fig. E.2 Cluster analysis with 3 clusters (service attributes)

Table E.3 Results of Cluster Analysis (Service Attributes)

Attribute	Level	Price-Sensitive (1)	Ordinary (2)	Rich (3)
Speed	fast	0.94	1.15	1.43
Cost	inexpensive	1.36	0.63	0.50
Screen	large	0.21	0.25	0.38
Personalization	exists	0.27	0.27	0.17
Content	SMS	-0.25	0.70	-0.96
Content	Detailed SMS	0.37	0.88	-0.16
Content	MMS	-0.12	-1.58	1.12

Table E.4 Number of Cases in Clusters (Service Attributes)

Clusters	Number of Cases
Price-Sensitive	61
Ordinary	12
Rich	29

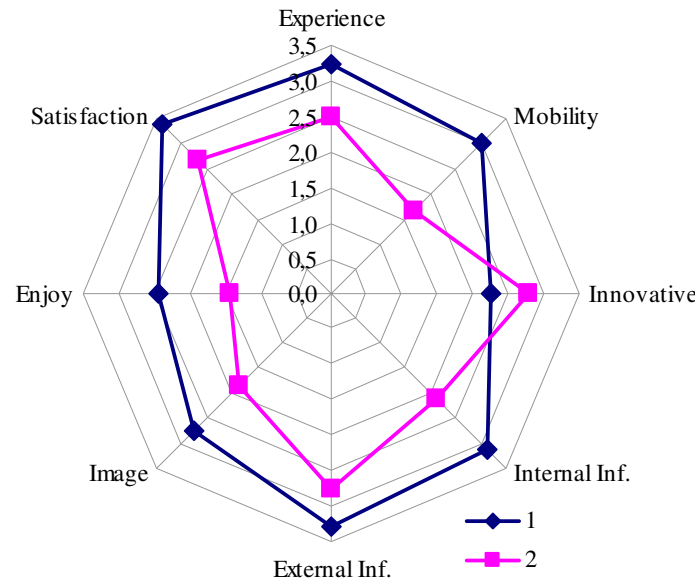


Fig. E.3 Cluster analysis with 2 clusters (user characteristics)

Table E.5 Results of Cluster Analysis (User Characteristics)

Constructs	Extroverted (1)	Introverted (2)
Experience	3.24	2.50
Mobility	3.00	1.64
Innovative	2.24	2.80
Internal Influence.	3.12	2.09
External Influence	3.28	2.75
Image	2.72	1.86
Enjoy	2.45	1.43
Satisfaction	3.36	2.66

Table E.6 Number of Cases in Clusters (User Characteristics)

Clusters	Number of Cases
Extroverted	58
Introverted	44

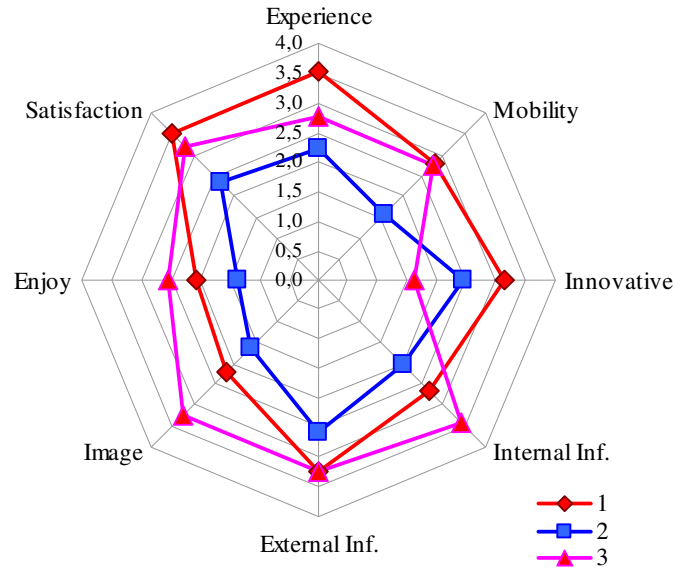


Fig. E.4 Cluster analysis with 3 clusters (user characteristics)

Table E.7 Results of Cluster Analysis (User Characteristics)

Constructs	Extroverted (1)	Introverted (2)	Image-Seeker (3)
Experience	3.52	2.21	2.77
Mobility	2.76	1.55	2.74
Innovative	3.14	2.45	1.61
SNormInt	2.62	2.00	3.39
SNormExt	3.24	2.59	3.23
Image	2.21	1.62	3.23
Enjoy	2.05	1.38	2.55
Satisfaction	3.48	2.31	3.19

Table E.8 Number of Cases in Clusters (User Characteristics)

Clusters	Number of Cases
Extroverted	42
Introverted	29
Image-Seeker	31

## APPENDIX F

### Regression Analysis Results

Table F.1 Model Summary of Regression 1

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0,85	0,72	0,717	0,415	
2	0,86	0,74	0,739	0,399	2,45

Predictors 1: (Constant), Attitude

Predictors 2: (Constant), Attitude, Useful

Dependent Variable: Intent

Table F.2 ANOVA Analysis of Regression 1

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	44,23	1	44,229	256,29	0,000
	Residual	17,26	100	0,173		
	Total	61,49	101			
2	Regression	45,76	2	22,878	143,99	0,000
	Residual	15,73	99	0,159		
	Total	61,49	101			

Predictors 1: (Constant), Attitude

Predictors 2: (Constant), Attitude, Useful

Dependent Variable: Intent

Table F.3 Coefficient Analysis of Regression 1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0,21	0,179		1,20	0,235
	Attitude	0,89	0,055	0,848	16,01	0,000
2	(Constant)	-0,22	0,221		-0,98	0,331
	Attitude	0,75	0,069	0,719	10,92	0,000
	Useful	0,26	0,085	0,204	3,10	0,003

Table F.4 Model Summary of Regression 2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0,635	0,40	0,397	0,579	
2	0,692	0,48	0,468	0,544	
3	0,710	0,50	0,488	0,534	2,08

Predictors 1: (Constant), Useful

Predictors 2: (Constant), Useful, Experience

Predictors 3: (Constant), Useful, Experience, SNormInt

Dependent Variable: Attitude

Table F.5 ANOVA Analysis of Regression 2

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22,643	1	22,643	67,50	0,000
	Residual	33,546	100	0,335		
	Total	56,189	101			
2	Regression	26,903	2	13,452	45,47	0,000
	Residual	29,286	99	0,296		
	Total	56,189	101			
3	Regression	28,290	3	9,430	33,12	0,000
	Residual	27,899	98	0,285		
	Total	56,189	101			

Predictors 1: (Constant), Useful

Predictors 2: (Constant), Useful, Experience

Predictors 3: (Constant), Useful, Experience, SNormInt

Dependent Variable: Attitude

Table F.6 Coefficient Analysis of Regression 2

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0,599	0,315		1,90	0,060
	Useful	0,780	0,095	8,22	0,000
2 (Constant)	0,330	0,304		1,08	0,281
	Useful	0,669	0,094	7,14	0,000
	Experience	0,216	0,057	3,79	0,000
3 (Constant)	0,158	0,308		0,51	0,608
	Useful	0,611	0,096	6,39	0,000
	Experience	0,224	0,056	4,00	0,000
	SNormInt	0,126	0,057	2,21	0,030

Dependent Variable: Attitude

Table F.7 Model Summary of Regression 3

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0,482	0,232	0,224	0,535	
2	0,605	0,367	0,354	0,488	
3	0,650	0,423	0,405	0,468	
4	0,670	0,449	0,426	0,460	2,03

Predictors 1: (Constant), Content

Predictors 2: (Constant), Content, Mobility

Predictors 3: (Constant), Content, Mobility, Personal

Predictors 4: (Constant), Content, Mobility, Personal, Experience

Dependent Variable: Useful

Table F.8 ANOVA Analysis of Regression 3

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8,649	1	8,649	30,24	0,000
	Residual	28,602	100	0,286		
	Total	37,251	101			
2	Regression	13,657	2	6,828	28,65	0,000
	Residual	23,594	99	0,238		
	Total	37,251	101			
3	Regression	15,744	3	5,248	23,91	0,000
	Residual	21,506	98	0,219		
	Total	37,251	101			
4	Regression	16,727	4	4,182	19,77	0,000
	Residual	20,523	97	0,212		
	Total	37,251	101			

Predictors 1: (Constant), Content

Predictors 2: (Constant), Content, Mobility

Predictors 3: (Constant), Content, Mobility, Personal

Predictors 4: (Constant), Content, Mobility, Personal, Experience

Dependent Variable: Useful



Table F.9 Coefficient Analysis of Regression 3

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,119	0,214		9,883	0,000
	Content	0,406	0,074	0,482	5,499	0,000
2	(Constant)	1,703	0,216		7,895	0,000
	Content	0,365	0,068	0,433	5,363	0,000
	Mobility	0,221	0,048	0,370	4,584	0,000
3	(Constant)	1,271	0,250		5,086	0,000
	Content	0,328	0,066	0,389	4,947	0,000
	Mobility	0,206	0,046	0,345	4,435	0,000
	Personal	0,185	0,060	0,243	3,084	0,003
4	(Constant)	1,052	0,266		3,960	0,000
	Content	0,313	0,066	0,371	4,777	0,000
	Mobility	0,172	0,048	0,288	3,556	0,001
	Personal	0,197	0,059	0,258	3,329	0,001
	Experience	0,105	0,049	0,174	2,156	0,034

Dependent Variable: Useful

Table F.10 Model Summary of Regression 4

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0,201	0,04	0,031	0,892	2,07

Predictors 1: (Constant), EoU

Dependent Variable: Enjoy

Table F.11 ANOVA Analysis of Regression 4

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3,367	1	3,367	4,23	0,042
	Residual	79,623	100	0,796		
	Total	82,990	101			

Predictors 1: (Constant), EoU

Dependent Variable: Enjoy

Table F.12 Coefficient Analysis of Regression 4

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,689	0,342		7,866	0,000
	EoU	-0,207	0,101	-0,201	-2,056	0,042

Dependent Variable: Enjoy