ATTITUDES AND BEHAVIOUR OF YOUNG MOBILE PHONE USERS

CASE OF TURKEY

NURDAN ÖKTEN

BOĞAZİÇİ UNIVERSITY

2013

ATTITUDES AND BEHAVIOUR OF YOUNG MOBILE PHONE USERS

CASE OF TURKEY

Thesis submitted to the

Institute for Graduate Studies in the Social Sciences

in partial fulfillment of the requirements for the degree of

Master of Arts

in

Management Information Systems

by

Nurdan Ökten

Boğaziçi University

2013

Thesis Abstract

Nurdan Ökten, “Attitudes and Behaviour of Young Mobile Phone Users

Case of Turkey”

Wireless devices especially mobile phones gained popularity among a wide variety of users because it gives communication freedom to individuals in their daily lives. Last century’s reports show that behaviors and attitudes of users’ especially young individuals are changing with the popularity of the mobile phones. Studies on social impacts of mobile phones had been scarce until a couple of years ago. Rather, past research on mobile phones examined engineering and policy aspects of the technology. In recent years, however, researchers started to turn attention to social aspects of cell phone diffusion and the impacts of cell phones had on people’s daily lives and relationships.

There are also open research areas in Turkey about the impacts of mobile phones on young users’ attitudes and behaviors. Most of the past studies about impacts of cell phones on young generation were conducted in Scandinavian, European and Asian countries. In order to add one more study for Turkey perspective to the worldwide body of the literature, this study examines how young individuals’ mobile phone behaviors change according to their demographic and cell phone usage characteristics, used mobile phone functionalities and social and psychological purposes of use. All of the characteristics in the research model that affect the user behavior are adapted from social science literature.

Data are collected from 431 respondents with the purpose of probing attitudes and behavior of young mobile phone users in Turkey. The data have been analyzed via descriptive, reliability, cross-tab and cluster analysis in order to test 72 hypotheses in 4 main groups and draw conclusions therein.

According to the findings, user behavior changes according to employment status and personal and parental education levels of young respondents. Young users, to whom the mobile phone has been given as a gift, pay less for monthly mobile usage. On the other hand, smart phone owners pay much more for their monthly mobile phone usage. In addition to this, as parallel to the mobile phone ownership duration, monthly paid amount for mobile is ascending. Young Avea customers pay less and feel less satisfied but Turkcell customers pay much more and feel more satisfied. Furthermore, mobile phone functionality addicted young customers pay much more monthly for mobile usage. Lastly, social and psychological mobile phone dependency level of respondents affects the young users' behavior during the time of the day.

Tez Özeti

Nurdan Ökten, "Türkiye'deki Gençlerin Cep Telefonu Kullanım Davranış ve Eğilimleri"

Kablosuz cihazlar arasında özellikle cep telefonları, kullanıcılara iletişim özgürlüğü sağladığı için geniş bir kullanıcı kitlesi ile popülerlik kazanmıştır. Son yüzyılın raporları gösteriyor ki; kullanıcıların özellikle gençlerin eğilim ve davranışları cep telefonlarının yaygınlaşmasıyla değişmektedir. Geçmiş yıllarda araştırmacılar; cep telefonlarının mühendislik ve teknoloji uygulamaları üzerine araştırmalar yaparken, son yıllarda cep telefonlarının kullanıcıların günlük yaşamları ve ilişkileri üzerine etkileri konusuna ilgi göstermeye başlamışlardır.

Cep telefonlarının gençlerin üzerine etkileri ve gençlerin eğilimleri konularında Türkiye'de de açık araştırma alanları bulunmaktadır. İskandinav, Avrupa ve Asya ülkelerinde benzer konularda çok sayıda araştırma yer almaktadır. Bu tez, sosyal bilimler literatürüne Türkiye bakış açısı ile gençlerin eğilim ve davranışlarına ait bir çalışma daha eklemek amacıyla gençlerin eğilim ve davranışlarını etkileyen faktörleri incelemektedir. Genç kullanıcıların davranışlarını etkileyen faktörler dört ana grup altında toplanmıştır. Bu gruplar: demografik özellikler, cep telefonu kullanım özellikleri, mobil cihazda kullanılan özellikler ve sosyal-psikolojik kullanım amaçlarıdır. Belirtilen özelliklerin hepsi sosyal bilimler literatürü incelenerek adapte edilmiş ve kullanılmıştır.

Türkiye'deki gençlerin cep telefonu kullanım davranışlarını ve eğilimlerini etkileyen faktörleri belirlemek amacıyla 431 katılımcıdan toplanan veri, 4 ana grup altında yer alan 72 adet hipotezi test etmek için tanımlayıcı, güvenilirlik, kümeleme ve çapraz tablo testleri ile analiz edilmiş ve ilgili sonuçlar çıkarılmıştır.

Elde edilen sonuçlara göre; gençlerin çalışma durumu ve kişisel ve ailevi eğitim düzeyi kullanıcı davranışlarını etkilemektedir. Cep telefonu, kendisine hediye edilen gençlerin aylık telefon kullanım masrafları daha düşük olurken, akıllı telefon kullanıcısı olan gençlerin aylık telefon masrafları daha yüksek olmaktadır. Ayrıca, toplam cep telefonu kullanım süresi arttıkça kullanıcıların aylık cep telefon kullanım masrafları da artmaktadır. Genç Avea kullanıcıları daha az memnun ve az miktarda ödeme yaparken, genç Turkcell kullanıcıları daha memnun ve daha yüksek miktarda ödeme yapmaktadır. Ek olarak, telefonun işlevsel özelliklerine bağımlı kullanıcıların aylık mobil masrafları daha yüksektir. Son olarak ise, sosyal ve psikolojik yönden bağımlılık düzeyine göre kullanıcının günün değişik zamanlarında telefon kullanım davranışı değişkenlik göstermektedir.

ACKNOWLEDGEMENTS

Foremost, I would like to express my sincere gratitude to my advisor Prof Dr. Meltem Özturan for her continuous support, trust, patience and motivation. Her guidance helped me in all the time of research and writing of this thesis. I could not imagine having a better advisor and mentor for my graduate study.

Besides my advisor, I would like to thank Assoc. Prof. Dr. Hande Kımıloğlu especially for her encouragement and insightful comments during my study. I am also thankful to my jury member, Prof. Dr. Mehpare Timor for participating in my thesis committee.

I would like to thank also my colleagues of Turkcell and my friends for creating a friendly and supportive environment. This includes my former manager and mentor Feyzullah Hakan Güler with his trust and support for my graduate education despite of working life restrictions and my lovely friends Neslihan Kırlı and Demetgül Bulut with their smiling face and support whenever I need.

Furthermore, I owe very special thanks to Ünal Kocabaş for his endless love, support, and faith in me all the time, despite of the kilometers between us.

Finally, I dedicate my thesis to my parents Semra&Rıdvan Ökten and my brother Adnan Ökten for giving birth to me and supporting me spiritually throughout my life.

CONTENTS

FIGURES

TABLES

CHAPTER 1

INTRODUCTION

Luxurious inventions are the miraculous output of technological revolution. Mobile phone, as a luxurious invention, is a globally ubiquitous communication device. Every comfort introduced by technological development also brings some impacts along with. Likewise, mobile phone technology has connected the masses in a magical way but its excessive usage has brought many implications as well. People are no more taking it as an accessory; rather it has become a necessity of life. As a result of this, cellular phone behavior has also changed and will continue to change fast.

Young people are the first reactors of this change and they are very dynamic consumers of cell phone related communication products and services. In recent years, researchers started to turn attention to social aspects of cell phone diffusion and the impacts cell phones had on young individuals' daily lives and relationships.

Due to this, there are also open research areas in Turkey about the impacts of mobile phones on young users' attitudes and behaviors. This study will examine how young Turkish individuals' mobile phone behaviors change according to their demographic and cell phone usage characteristics, used mobile phone functionalities and social and psychological purposes of use.

First of all, a literature search has been made and a questionnaire has been developed after aggregating a set of items from the literature and generating a theoretical framework. After that, a panel of experts and pilot studies have been

consulted to ensure that the understandability and measurement of the questionnaire are appropriate. Convenience sampling (non-probability sampling design) has been used to gather information quickly and efficiently. The respondents of the survey were 18-30 years young individuals in Turkey who use the Internet.

431 respondents successfully completed all questions of the survey. These collected 431 responses by the survey were statistically analyzed using SPSS v.18 and suggested hypotheses were tested.

This thesis is composed of the following chapters:

- Chapter 1 includes the introduction as an overview of the study.
- Chapter 2 reviews the literature about impacts of mobile phones on young users' attitudes and behaviors.
- Chapter 3 summarizes the aim and objectives of the study, key questions, theoretical framework and the hypotheses of the study.
- Chapter 4 presents the research methodology of the study.
- Chapter 5 presents the analyses and findings of the study.
- Chapter 6 covers the discussion of findings, implications, and limitations of the study.

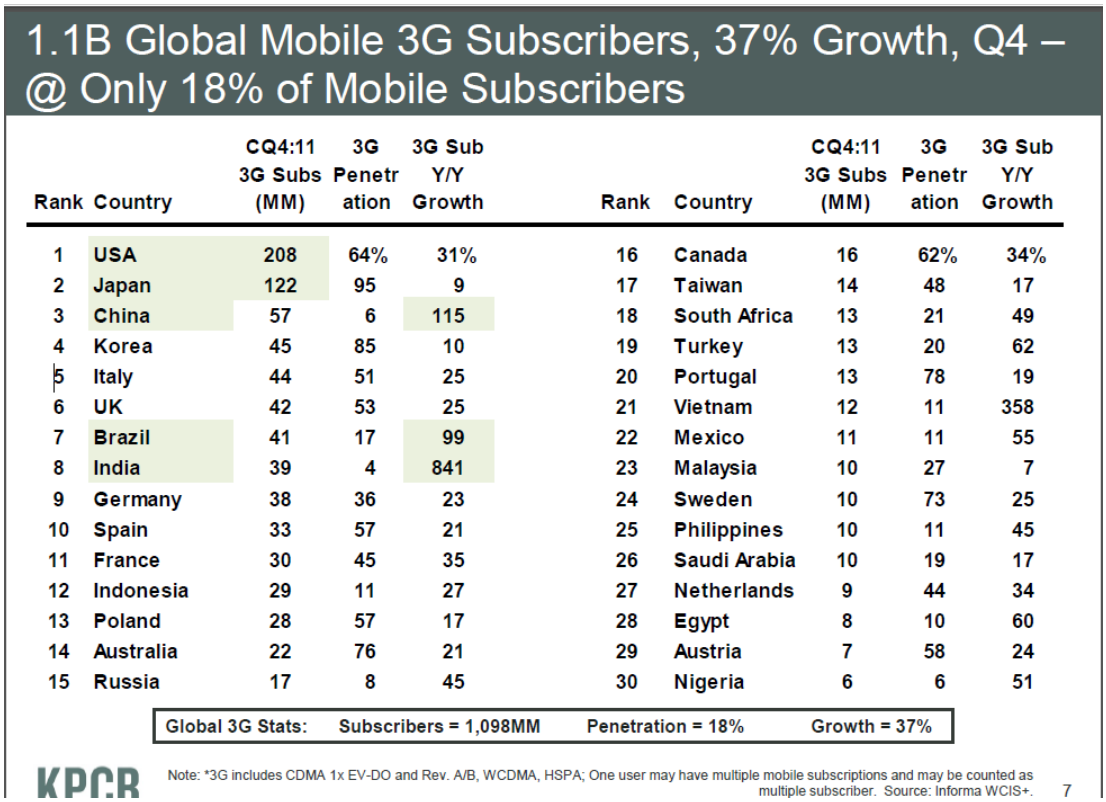
CHAPTER 2

LITERATURE REVIEW

In recent years, wireless devices gained popularity among a wide variety of users. Especially mobile phones are a pervasive new communication technology, because it gives communication freedom to individuals in their daily lives.

Mary Meeker published a report in May 2012 that talks about today's Internet growth and provides an in-depth look for the following new trends. Meeker (2012)'s report displays that "Mobile application and advertisement incomes arrived to 19 billion dollars increasing 129% till 2008". Importance of the mobile is increasing day by day. Another impressive point from the report is that "Number of smart phones on the world reached to 1.1 billion and this number covers the %17 of mobile phone users".

According to Meeker (2012)'s report, Turkey is a growing mobile country with its young population. Growth of the 3G subscribers in Turkey can be seen from Figure 1. Year by year growth rate of Turkey is 62% and it means that Turkey has a dynamic mobile market.



1.1B Global Mobile 3G Subscribers, 37% Growth, Q4 – @ Only 18% of Mobile Subscribers

Rank	Country	CQ4:11 3G Subs (MM)	3G Penetration	3G Sub Y/Y Growth	Rank	Country	CQ4:11 3G Subs (MM)	3G Penetration	3G Sub Y/Y Growth
1	USA	208	64%	31%	16	Canada	16	62%	34%
2	Japan	122	95	9	17	Taiwan	14	48	17
3	China	57	6	115	18	South Africa	13	21	49
4	Korea	45	85	10	19	Turkey	13	20	62
5	Italy	44	51	25	20	Portugal	13	78	19
6	UK	42	53	25	21	Vietnam	12	11	358
7	Brazil	41	17	99	22	Mexico	11	11	55
8	India	39	4	841	23	Malaysia	10	27	7
9	Germany	38	36	23	24	Sweden	10	73	25
10	Spain	33	57	21	25	Philippines	10	11	45
11	France	30	45	35	26	Saudi Arabia	10	19	17
12	Indonesia	29	11	27	27	Netherlands	9	44	34
13	Poland	28	57	17	28	Egypt	8	10	60
14	Australia	22	76	21	29	Austria	7	58	24
15	Russia	17	8	45	30	Nigeria	6	6	51

Global 3G Stats: Subscribers = 1,098MM Penetration = 18% Growth = 37%

KPCB

Note: *3G includes CDMA 1x EV-DO and Rev. A/B, WCDMA, HSPA; One user may have multiple mobile subscriptions and may be counted as multiple subscriber. Source: Informa WCIS+. 7

Fig. 1 Global mobile 3G subscribers
Source: Mary Meeker Internet Trends Report (2012, May).

Another important report from Flurry (Khalaf, 2012)'s analytics has been published in USA about how mobile applications became a part of our daily lives. As can be seen from Figure 2, report summarizes that:

> "The chart shows that time spent in apps already totals 76% of time spent on television. With new content released via thousands of new apps each day, we expect this trend to continue. In fact, we ultimately expect apps on tablets and smartphones to challenge broadcast television as the dominant channel for media consumption. Compared to the 60-year-old television industry, apps are just over 4 years old. In particular, tablets will drive growth in app consumption in 2013 as TV-style content and major programming moves to the tablet. Most TV Networks have already adjusted to a dual screen world and are synchronizing their TV content with their tablet app content. We believe that, with the introduction of connected TVs, TV shows will behave like apps."

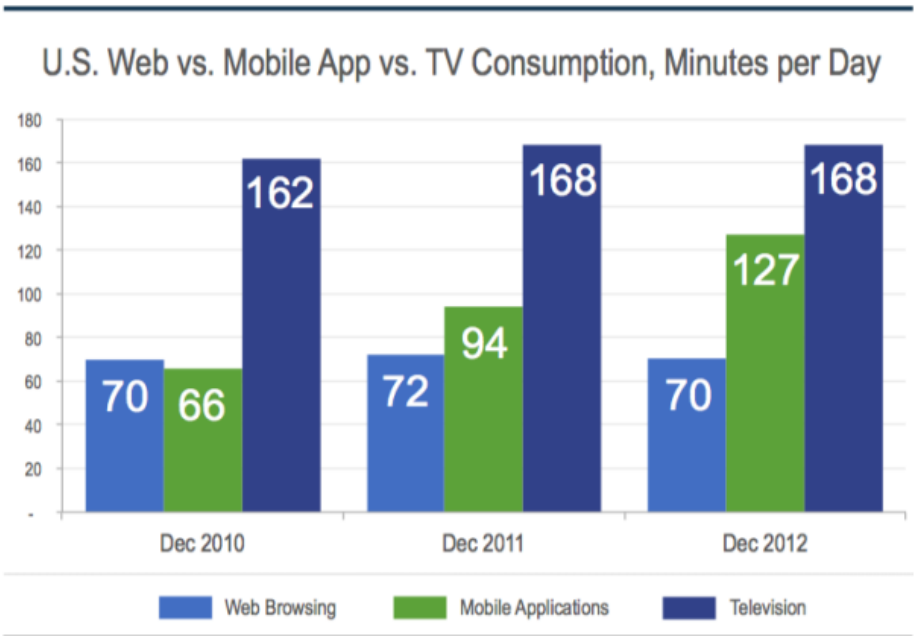


Fig. 2 U.S. web vs. mobile app vs. TV consumption, minutes per day
Source: Blog of Flurry Analytics (Khalaf, 2012).

Because of the maturity of the TV market, there is an assumption that the time spent on TV will become flat year-over-year but mobile applications' trend will change increasingly.

As mentioned above, this increasing trend of the mobile phone usage directly affects the mobile phone operators' investments, technological developments and behaviors of users. ''The diffusion of the mobile phone was among the fastest of any technology in history . . . By 1999 there were nearly 500 million mobile telephones in use throughout the world'' (Townsend, 2002).

First reactors and adapters of this mobile usage trend are young individuals. "The market segment consisting of young people has been called the sweet spot of the communications industry. Young people are very dynamic consumers of cell phone related communication products and services" (Haverila, 2011). Because of this, cellular

telephone usage is increasing among the young users all over the world rapidly. According to the Forrester Research and Yankee Group, in 1999 34% of 16–22-year-olds (Grimm, 2001) and about 28% of 10–19-year-olds owned a cell phone (Curry, 2001).

Last century's reports show that behaviors and attitudes of users' especially young ones are changing with the popularity of the mobile phones.

Aoki and Downes (2003) point out to this changing behavior:

> "Studies on social impacts of mobile phones had been scarce until a couple of years ago. Rather, past research on mobile phones examined engineering and policy aspects of the technology. In recent years, however, several researchers started to turn attention to social aspects of cell phone diffusion and the impacts cell phones had on people's daily lives and relationships (p.350)."

Past researches about the impacts of mobile phones on young users' attitudes and behaviors have been explained in given order with these sections:

- Demographic characteristics of the user that affect the user's attitude and behavior.
- Mobile phone usage characteristics of the user that affect the user's attitude and behavior.
- Social and psychological factors/purposes that affect the user's attitude and behavior.
- Usage of mobile phone functionalities that affect the user's attitude and behavior.
- The behavioral characteristics of mobile phone users

Demographic and Mobile Phone Usage Characteristics of Young Mobile Phone Users

Students may find many different reasons for having and using a mobile phone. Demographic characteristics of the young individuals is one the main factors that directly affect their behaviors. Ahmed&Qazi (2011) state that "Students have started using mobile phone at 10-18 years of their age; consider mobile phone as necessity of life".

First of all, gender of the mobile phone user is one of the key demographic features that directly affect the user's behavior. Economides&Grousopoulou (2009) states that "Gender has been discovered to have an effect on the communication behavior and the adoption of technology".

Geser (2006) also points out the gender differentiation about the mobile phone usage referencing to Lorente (2002), Lohan (1997) and (Lange, 1993):

> Typically, men are stressing instrumental phone uses, as "….more amongst boys than girls –, the mobile phone is seen as an instrument helping to organize life, to arrange dates and contacts, actions, meetings, etc., Thus aiding in growing in maturity and autonomy, both necessary for the adult stage" (Lorente 2002: 17).
> Women, on the other hand, tend to use the phone more as medium for personal and emotional exchange (Lohan 1997; Lorente 2002: 16): "Men appear to have a different concept of communication. In contrast to women, they give an "objective reason" for the "usefulness" of their call. Men maintain that they mainly arrange appointments, exchange short snippets of news or information and discuss defined questions or problems. Women admit to calling "for the sake of it", to speak with one another and to exchange general news. The shorter duration of men's calls seems to be connected with their different understanding of communication and its embodiment in the telephone"(Lange, 1993: 213).

Another relevant literature about gender roles towards the mobile phone behaviors from Waldman, Sheets, Jones & Nichols (2005) states that:

> "Male students are more likely to use their minutes for work-related reasons, and female students tend to use the majority of their minutes for either emergencies or leisure."

Turner (2008) also explains that user's individual attributes (gender, age etc.) and personality traits have differentiated association with phone-related behaviors.

Supporting to gender differentiation, cell phone ownership issue is one of the cell phone usage characteristics. Waldman, Sheets, Jones & Nichols (2005) analyzes and gives the results of the relationship between gender and cell phone ownership issue in Table 1.

According to Table 1, there is a significant relationship between cell phone ownership and gender, age, and school variables and female students were tended to own a cell phone but male students were more likely not to own.

Table 1. Cell Phone Ownership Comparisons

Cell Phone Ownership Comparisons					
Criteria	Actual Owning	Expected to Own	Actual Not Owning	Expected Not to Own	Chi Square Calculation
Male	166 (30%)	181	52 (9%)	37	12,765 p≤0.001 n=560
Female	300 (54%)	285	42 (7%)	57	
Totals	466		94		
Ages 18-19	218 (43%)	206	33 (6%)	45	17,392 p≤0.001 n=508
Ages 20-21	124 (25%)	122	25 (5%)	27	
Ages 22-23	38 (8%)	45	17 (3%)	10	
Ages 24+	36 (7%)	43	17 (3%)	10	
Totals	416		92		
BU	187 (33%)	187	38 (7%)	38	7,504 p≤0.025 n=562
MSU	229 (41%)	236	55 (10%)	48	
CPP	51 (9%)	44	2 (0%)	9	
Totals	467		95		

Source: Waldman, Sheets, Jones & Nichols (2005).

Another factor that affect the user's mobile phone attitudes and behaviors are: location of cell phone use and employment status of the users.

Totten, Lipscomb, Cook & Lesch (2005) analyzed college students' general patterns of cell phone usage and resulted some relationships between gender, location of cell phone use and employment status of the responders.

Totten, Lipscomb, Cook & Lesch (2005) result that women reported using cell phones in malls at a significantly higher frequency, 81.3%, than did men, 68.7% as shown in Table 2.

Table 2. Gender and Location of Use Relationship

Gender x Location of Use				
Location	Women	Men	$\chi 2$	Significance
Shopping Malls	81.4%	68.7%	7,82	P=.005

Source: Totten, Lipscomb, Cook & Lesch (2005).

They also state that there is relationship between employment status of the students and their location of cell phone use as shown in Table 3.

Table 3. Employment Status and Location of Use Relationship

Employment Status x Location of Use					
Location	Full-time	Part-time	Not Employed	$\chi 2$	Significance
Home	71.6%	86.2%	90.0%	13,53	P=.001
School	61.9%	79.6%	70.0%	12,26	P=.002

Source: Totten, Lipscomb, Cook & Lesch (2005).

Another research about the location of cell phone use was published by Ito and Daisuke in 2000. Research relies on this main idea: “Teens use mobile phones because they enable new kinds of social contact, because teens are limited in access to adult forms of social organization”.

From this starting point, Ito & Daisuke have analyzed dynamics of mobile phone use in three kinds of places: the private space of the home, public spaces of public

transportation and street, and the virtual space of online peer connectivity. They have revealed that there are many patterns of teen text messaging related to these places.

In addition to these factors that directly affect the user's mobile phone behaviors, educational level is also an important demographic characteristic. Educational level has two dimensions as personal and parental educational levels to examine.

Geser(2006) states that about the relation between cell phone traffic and parental educational level:

> "The number of monthly audio calls and SMS girls send out or receive is highest when the educational level of their parents is consistently low, and it is at the lowest level when father or mother (or both) have academic degrees."

Social and Psychological Purposes of Young Mobile Phone Users

Definition of Cultural geographer Doreen Massey (1993) about mobile phone is: "The mobile phone is an emblematic technology of space-time compression, touted as a tool for anytime, anywhere connectivity". This space-time compression technology became a part of our lives and has strong interaction with our social and psychological attitudes.

Especially in last decade, many researches made about social and psychological sides/impacts of mobile phones on individuals. From the aspect of the young mobile phone users, there are also lots of models and analyzes about why they intended to use mobile phone.

For example, a model called MUSM (Mobile Phone Usage Space Model) has been suggested by Biljon, Kotze & Renaud in 2008. MUSM classifies 18-30 age group young

individual needs in two spaces. According to the MUSM user has core and additional usage spaces as shown in Figure 3.

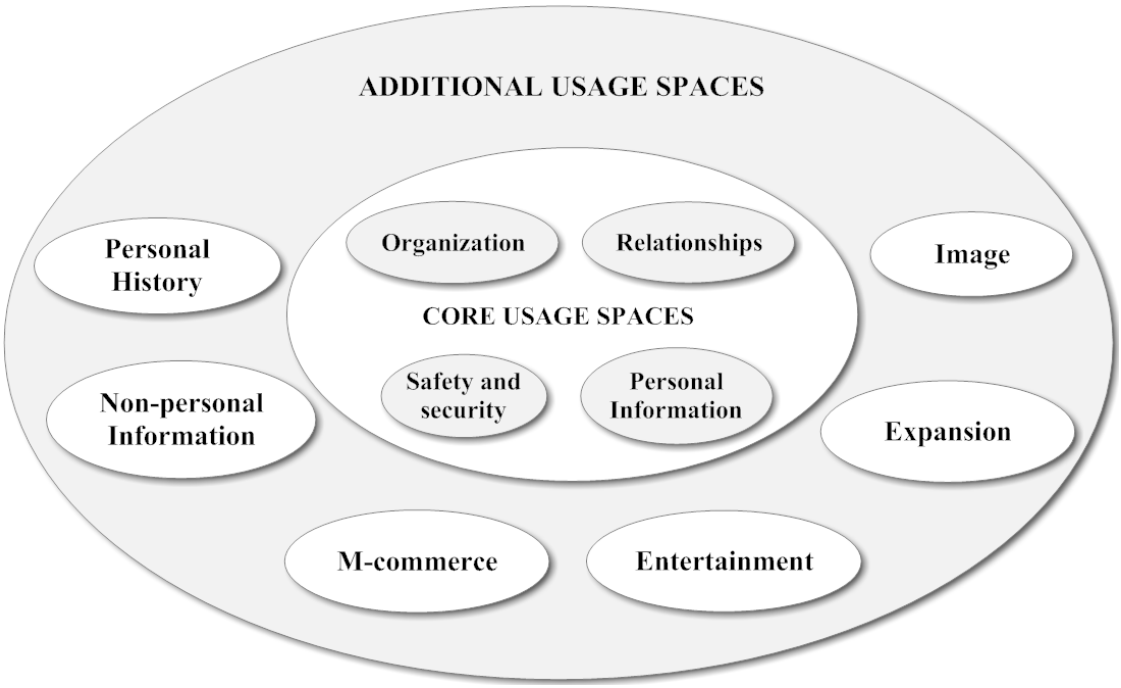


Fig. 3 MUSM for the 18-30 age groups
Source: Biljon, Kotze & Renaud (2008).

In core usage spaces:

- User has safety and security purposes by using mobile phone
- User has relationship purpose like building and maintaining the relationships with other people by using mobile phone
- User has organization purpose for making arrangements by using mobile phone
- User has personal privacy purpose to store the information on mobile phone

In additional usage spaces:

- User makes mobile phone is a part of him/her image, which is an psychological attitude
- User has some social purposes like entertainment, m-commerce to use mobile phone
- User stores his/her non-personal information and personal history by using mobile phone
- User explores new environment by using mobile phone (under expansion group)

Concluding from the MUSM model, users have variety of social and psychological purposes of mobile phone use covered by these two spaces.

Furthermore, Aoki & Downes also made a research in 2003 to examine college students' cell phone usage from a behavioral (length of cell phone usage, typical time of cell phone use etc.) and psychological perspective. Aoki & Downes made a focus group study to extract the themes that are the factors of cell phone use. Nine motivational themes (purpose of mobile phone use) that attract the students emerged from the focus group. These themes were:

- Personal safety
- financial incentive; (cell phones are more economic)
- information access
- social interaction
- parental contacts
- time management/coordination

- dependency(they feel lost without it)
- personal image
- privacy management

As a result of this research, Aoki & Downes (2003) extracted five distinct groups in terms of their attitudes toward their cell phone usage and in terms of the levels of integrating cell phones into their lives. These five groups stated as:

- cost conscious users
- safety/security conscious users
- dependent users
- sophisticated users
- practical users

Totten, Lipscomb, Cook & Lesch (2005) also explain and group the social purpose of young users' cell phone use as:

- for the purpose of social stimulation
- to remain continually available
- for domestic reasons
- for time-keeping
- for emergency purposes

Furthermore, Naz et al. (2011) made a research to identify and record various social impacts of mobile phones on university students in Pakistan with similar to Aoki & Downes. Social impacts of mobile phones have been listed in the research as following: social instability, social mal-adjustment, non-trust worthy, domestic conflicts,

degraded social status, passivism, social mockery, deviance, cultural insurgency and laxness.

Besides the researches on social aspects, there are also researches about the psychological attitudes of the young mobile phone users in different countries.

Especially text messaging has an important place among young mobile phone users and researchers made a lot of studies about social and psychological aspects of text messaging especially early developing years of GSM.

Taylor and Harper (2003) state that about text messaging:

> "Young people use mobile phone content and the phones themselves to participate in the practices of gift exchange."

Young mobile phone users see the text messaging like a ritual ceremony: gift exchange. In addition to this, Frost & Sullivan (2006) made also a research to measure the social and economic impacts of mobile telephony services on rural and semi-urban areas in Latin America. Frost & Sullivan applied a methodology based on fieldwork consisting of 800 interviews in rural communities and semi urban cities in the four countries where mobile telephony has had the strongest development. According to the interview results, responders state given psychological reasons about why they need mobile phone:

- I feel more secure in case of an emergency
- I feel more informed
- I feel accompanied
- I feel more secure / protected from theft
- I travel less
- I feel more important.

Walsh (2009) notes the role of mobile phone as:

> "Mobile phone behavior plays in young people's social development and also signals the characteristics of those people who may become highly involved with their mobile phone."

In an another qualitative research conducted by Walsh et al. (2008) it has been found that young people are obsessed with using their cell phones and often seen to show the symptoms of behavioral addiction.

As a result, young individuals use mobile phones for various social and psychological reasons and there are many researches from both sociology and psychology branches in the worldwide about this variety of reasons.

Usage of Mobile Phone Functionalities by Young Mobile Phone Users

Mobile phones have come a long way in the last seventy years and technology of devices is increasing rapidly day by day. Mobile phone functionalities have also increased as parallel to this technological development from first generation (1G) to last generation (4G and over).

One of the most widely used mobile phone functionality is text messaging. Pew Research Center made a research about text messaging among the US citizens in 2011 and interviewed 2,277 people over the 18's for its survey. According to the Smith's (2011) report as shown in Figure 4, people in the 18-24 year-old range are sending and receiving 110 texts per day on average. The median number of texts sent/received by that group is 50 per day. The overall average for texting per day amongst cell phone users is 42. As a result of Figure 4, young adults are the most powerful texters by a wide margin.

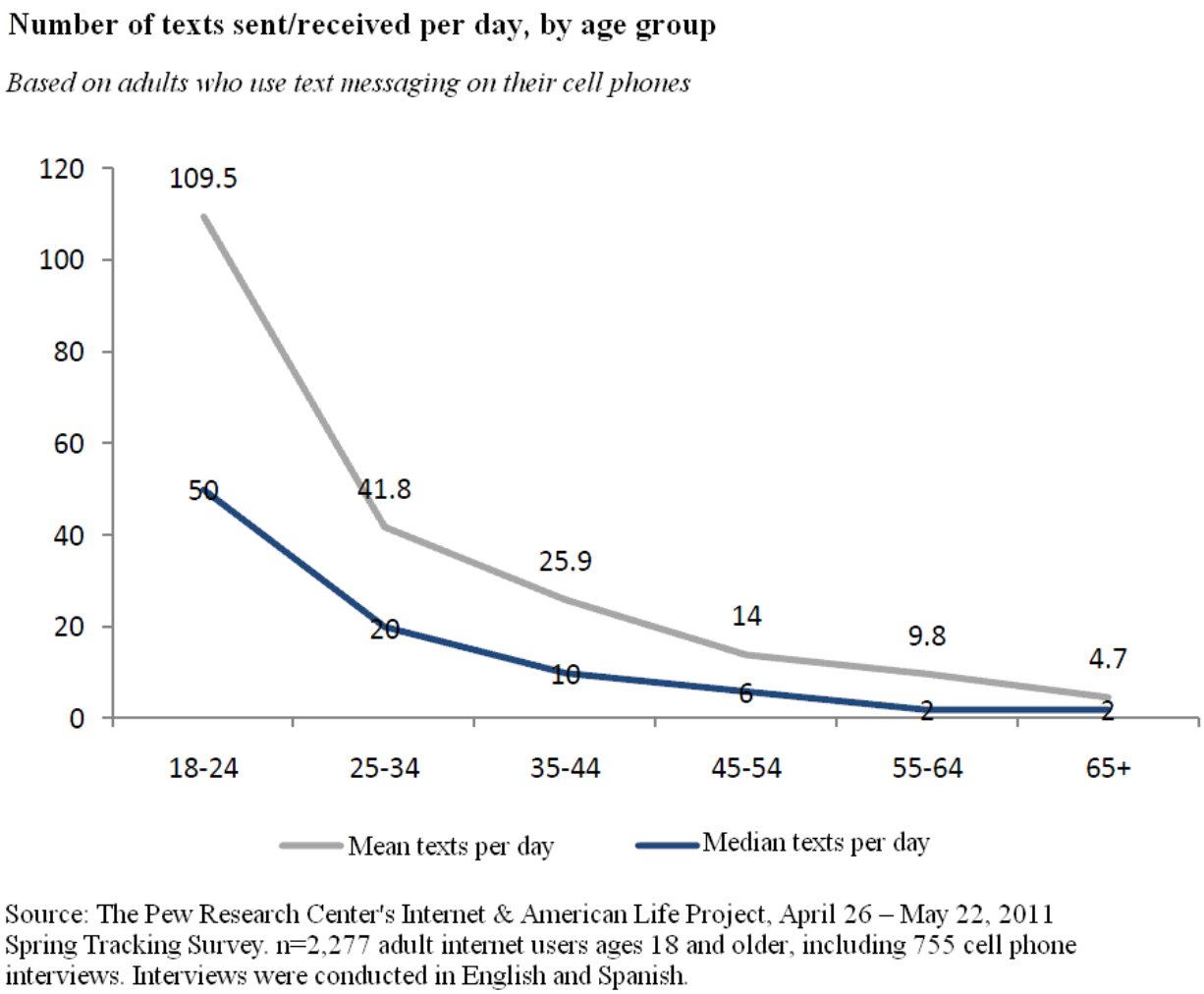


Fig. 4 Number of texts sent/received per day, by age group
Source: Smith's Pew Research Center Report (2011).

Jones, Chris and Cross, Simon (2009) reported a research project to investigate first year university students' use of technology in relation to the idea of young people born after 1983 forming a distinct age cohort described variously as the 'Net generation' or 'Digital Natives'. The research took place in five English universities in the spring of 2008 and investigated usage density of given 12 technologies in Figure 5.

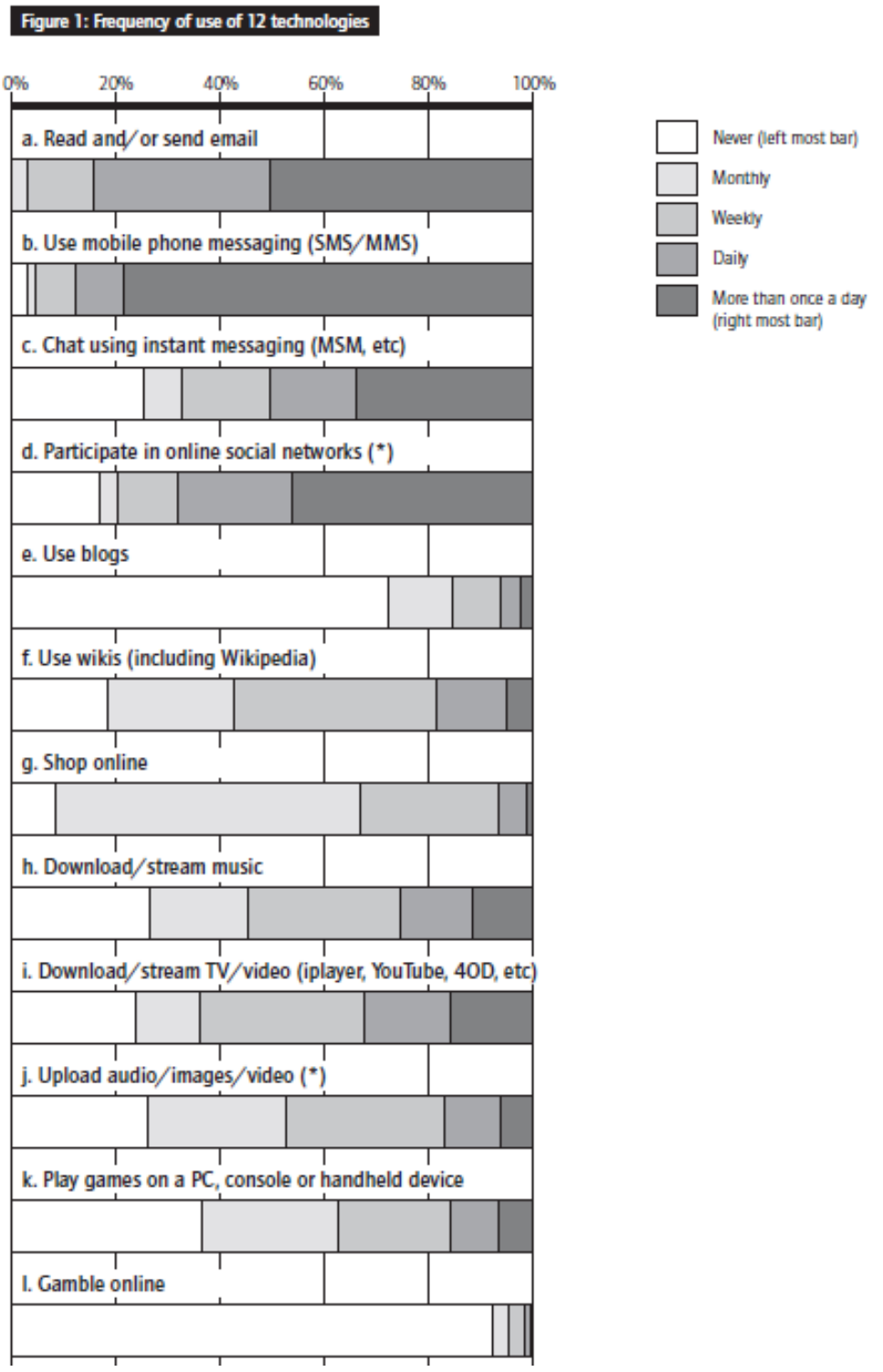


Fig. 5 Frequency of use of 12 mobile phone technologies
Source: Jones, Chris and Cross, Simon (2009).

Jones, Chris and Cross, Simon (2009) note that about the used functionalities:

> "Almost all students owned a mobile phone (97.8%) and these phones generally came with a camera (91.9%); music player (77.25); and internet access (75.7%). We were very surprised by the apparently rapid uptake of mobile broadband by students who are often in university residences with good broadband access."

Greenberg et al. (2010) have been also made a research about orientations to video games from the gender point of view.

Another similar research to explain the relationship between mobile phone functionalities and purpose of mobile phone use made by Biljon, Kotze & Renaud in 2008. As explained above in Figure 3, Biljon, Kotze & Renaud suggested a model called MUSM. According to the MUSM model, each usage space has a connection to related mobile phone functionalities as given in Table 4. Using this connection between the mobile phone functionalities and purpose of use, user behaviors and attitudes can be analyzed by using one side of the relationship.

Table 4. Relationship Between Needs, Usage Spaces and Features in MUSM

Relationships between needs, usage spaces and features in MUSM		
Usage space name and description	Motivational Needs [8, 24, 31]	Features associated with the usage space by target group
Relationships: building and maintaining relationships with other people	Sense of belonging, Community, Acceptance	SMS, calling, e-mail, phone book, MMS, check missed calls, caller ID
Personal information: Storing information on the user	Security, Cognitive, Expression	Phone book, reminders, call log, organizer
Organization: Synchronizing and making arrangements	Cognitive, Expression	Phone book, organizer, reminders, check missed calls, calendar, currency converter, vibrating alert, alarm, calculator, stopwatch
Safety and security: Making people feel safe and providing security	Safety and security	Caller ID, alarm, car kit, torch
Personal history: Creating a personal history	Expression, Esteem	Photo album, MMS, camera, video player, voice recorder
Entertainment: Music, jokes, playing games etc.	Cognitive, Aesthetic	Photo album, browse Internet, camera, video capture, video player, Bluetooth, FM radio, profiles, ringtones, voice recorder, MP3/AAC, games, tri/quad band
Expansion: Exploring new environments or finding new ways to do things	Expansion, Adventure	No prominent features identified
Non-personal information: Information on products and services	Cognitive, Exchange	Browse Internet, calendar, Bluetooth, currency converter, calculator, predictive text
Exchange: Represented by m-commerce	Exchange	Browse Internet, e-banking
Image (including self-image): enhancing by the appearance, brand, ring tone and accessories	Esteem, Expression, Acceptance	Ringtones

Source: Biljon, Kotze & Renaud (2008)

The Behavioral Characteristics of Mobile Phone Users

Past researches about the reasons of young individuals for using mobile phone were explained in details above. Young individuals are buying and using mobile phones for various reasons like demographic, social and psychological or functionality related. All these reasons create the behavior of user and the other important point is how to measure this behavior.

There are several scales to measure the mobile phone users' behavior in numeric form that called "usage intensity".

Geser (2006) explains the usage intensity as:

> "The term "usage intensity "is a multidimensional concept that has to be operationalized by a comprehensive battery of empirical indicators: by the average monthly telephone bill as well as by the number of outgoing and incoming audio calls and text messages, the average length of calls as well as the time span of connectivity and the number of contacted partners."

Chakraborty (2006) also suggests a scale about the behavioral characteristics of the university students. This scale composes of given variables below:

- usage data such as length of cell phone usage
- typical time of cell phone use
- average number of calls received/sent
- typical location of cell phone use
- use and number of text messages

In conclusion, all these variables in the given scales are similar and easily measurable by using survey methodologies. Behavior of the young mobile phone users can be analyzed by using these scales under the meaning of "usage intensity".

CHAPTER 3

THEORETICAL MODEL AND HYPOTHESES

Problem Statement

Wireless devices especially mobile phones gained popularity among a wide variety of users because it gives communication freedom to individuals in their daily lives. Last century's reports show that behaviors and attitudes of users' especially young ones' are changing with the popularity of the mobile phones.

Studies on social impacts of mobile phones had been scarce until a couple of years ago. Rather, past research on mobile phones examined engineering and policy aspects of the technology. In recent years, however, several researchers started to turn attention to social aspects of cell phone diffusion and the impacts cell phones had on people's daily lives and relationships.

For this reason, there are also open research areas in Turkey about the impacts of mobile phones on young users' attitudes and behaviors.

Aim and Objectives

Most of the past studies about impacts of cell phones on young generation were conducted in Scandinavian, European and Asian countries. In order to add the Turkey perspective to the worldwide body of the literature, this study will examine how young individuals' mobile phone behaviors change according to their demographic and cell phone usage characteristics, used mobile phone functionalities and social and psychological purposes of use.

Key Questions

Targeted questions have been prepared and asked to collect the correct answers before starting research. Based on the objectives, the following research questions have been prepared;

- How many calls/text messages does a young user send/receive in a day?
- What is the total daily call duration of a young user?
- How much does a young user pay for mobile phone invoice monthly?
- How does mobile phone usage density of a young user change according to time of a day?

- Do given characteristics of a young user affect responses to the preceding questions?
    - Gender
    - Employment status
    - Education level
    - Education level of parents
    - Cell phone bought myself
    - Location of cell phone use
    - Smartphone ownership
    - Total cell phone ownership duration
    - Mobile operator satisfaction
- Which mobile phone functionalities have been used by young individuals?
- Can user groups be created according to used mobile phone functionalities? How does user behavior change according to this group assignment?
- For which social reasons does a young individual use mobile phone?
- For which psychological reasons does a young individual use mobile phone?
- Can user clusters be created according to social and psychological reasons? How does user behavior change according to this cluster assignment?

Theoretical Framework

Based on the aim and objectives, the following theoretical framework has been generated. Theoretical framework can be seen below in Figure 6.

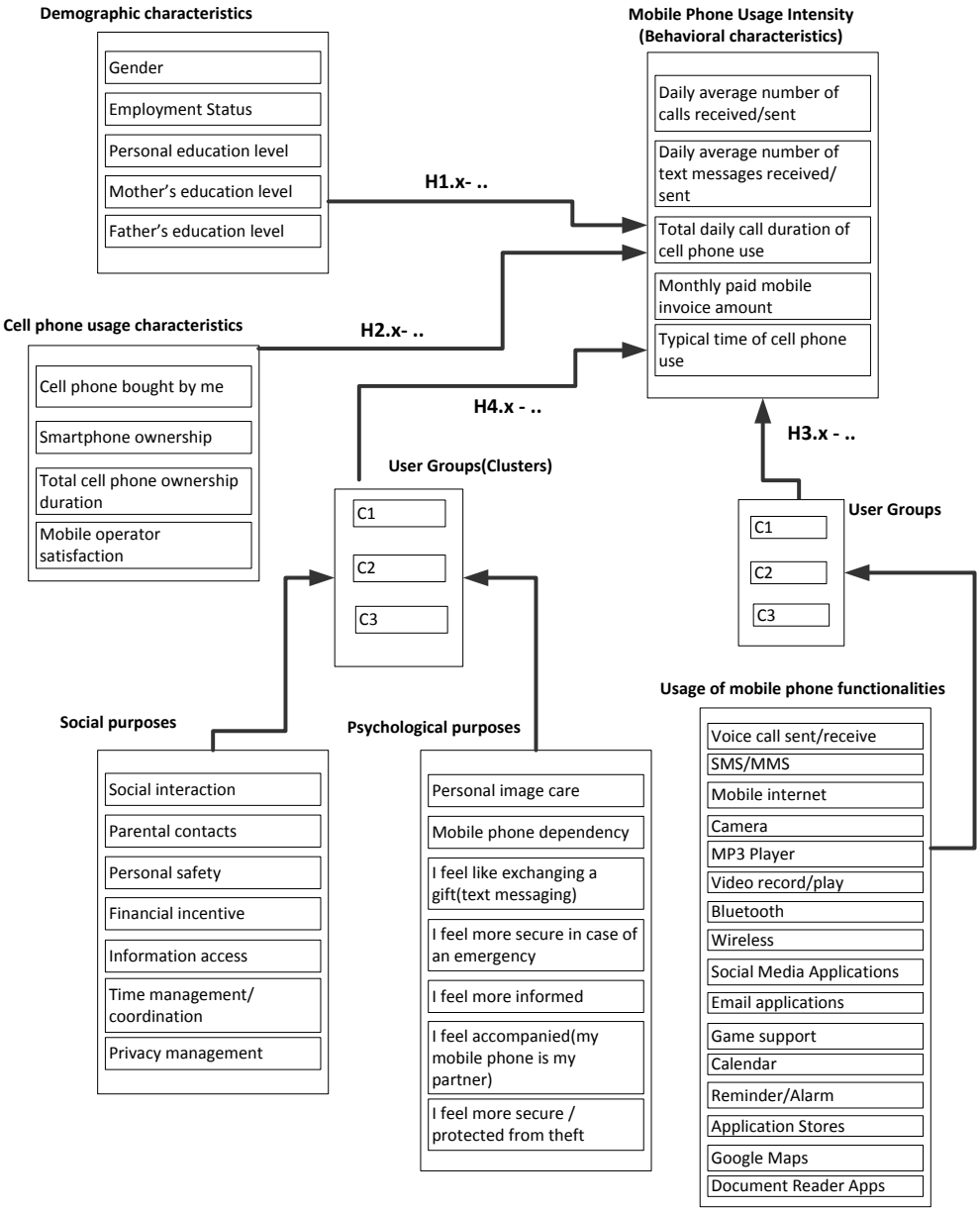


Fig. 6 Theoretical framework

Hypotheses

Based on the given theoretical framework (see Figure 6), hypotheses below have been determined. Appropriate tests have been applied for each hypothesis.

Hypothesis 1: User behavior/Mobile phone usage intensity changes according to demographic characteristics.

- Hypothesis 1.1: There is a relationship between ‘gender’ and mobile phone usage intensity. (8 sub-hypothesis for each mobile phone usage intensity scale attribute)
    - Hypothesis 1.1.1: There is a relationship between ‘gender’ and ‘daily average number of calls received/sent’
    - Hypothesis 1.1.2: There is a relationship between ‘gender’ and ‘daily average number of text messages received/sent’
    - Hypothesis 1.1.3: There is a relationship between ‘gender’ and ‘total daily call duration of use’
    - Hypothesis 1.1.4: There is a relationship between ‘gender’ and ‘monthly paid mobile invoice amount’
    - Hypothesis 1.1.5: There is a relationship between ‘gender’ and ‘typical time of cell phone use in morning’
    - Hypothesis 1.1.6: There is a relationship between ‘gender’ and ‘typical time of cell phone use in noon’
    - Hypothesis 1.1.7: There is a relationship between ‘gender’ and ‘typical time of cell phone use in evening’

- Hypothesis 1.1.8: There is a relationship between ‘gender’ and ‘typical time of cell phone use at night’

- Hypothesis 1.2: There is a relationship between ‘employment status’ and mobile phone usage intensity. (8 sub-hypothesis for each mobile phone usage intensity scale attribute)
  - Hypothesis 1.2.1: There is a relationship between ‘employment status’ and ‘daily average number of calls received/sent’
  - Hypothesis 1.2.2: There is a relationship between ‘employment status’ and ‘daily average number of text messages received/sent’
  - Hypothesis 1.2.3: There is a relationship between ‘employment status’ and ‘total daily call duration of use’
  - Hypothesis 1.2.4: There is a relationship between ‘employment status’ and ‘monthly paid mobile invoice amount’
  - Hypothesis 1.2.5: There is a relationship between ‘employment status’ and ‘typical time of cell phone use in morning’
  - Hypothesis 1.2.6: There is a relationship between ‘employment status’ and ‘typical time of cell phone use in noon’
  - Hypothesis 1.2.7: There is a relationship between ‘employment status’ and ‘typical time of cell phone use in evening’
  - Hypothesis 1.2.8: There is a relationship between ‘employment status’ and ‘typical time of cell phone use at night’
- Hypothesis 1.3: There is a relationship between ‘personal education level’ and mobile phone usage intensity. (4 sub-hypothesis for each mobile phone usage intensity scale attribute)

- Hypothesis 1.3.1: There is a relationship between ‘personal education level’ and ‘daily average number of calls received/sent’
- Hypothesis 1.3.2: There is a relationship between ‘personal education level’ and ‘daily average number of text messages received/sent’
- Hypothesis 1.3.3: There is a relationship between ‘personal education level’ and ‘total daily call duration of use’
- Hypothesis 1.3.4: There is a relationship between ‘personal education level’ and ‘monthly paid mobile invoice amount’

- Hypothesis 1.4: There is a relationship between ‘mother’s education level’ and mobile phone usage intensity. (4 sub-hypothesis for each mobile phone usage intensity scale attribute)
  - Hypothesis 1.4.1: There is a relationship between ‘mother’s education level’ and ‘daily average number of calls received/sent’
  - Hypothesis 1.4.2: There is a relationship between ‘mother’s education level’ and ‘daily average number of text messages received/sent’
  - Hypothesis 1.4.3: There is a relationship between ‘mother’s education level’ and ‘total daily call duration of use’
  - Hypothesis 1.4.4: There is a relationship between ‘mother’s education level’ and ‘monthly paid mobile invoice amount’
- Hypothesis 1.5: There is a relationship between ‘father’s education level’ and mobile phone usage intensity. (4 sub-hypothesis for each mobile phone usage intensity scale attribute)
  - Hypothesis 1.5.1: There is a relationship between ‘father’s education level’ and ‘daily average number of calls received/sent’

- Hypothesis 1.5.2: There is a relationship between ‘father’s education level’ and ‘daily average number of text messages received/sent’
- Hypothesis 1.5.3: There is a relationship between ‘father’s education level’ and ‘total daily call duration of use’
- Hypothesis 1.5.4: There is a relationship between ‘father’s education level’ and ‘monthly paid mobile invoice amount’

Hypothesis 2: User behavior/Mobile phone usage intensity changes according to mobile phone usage characteristics.

- Hypothesis 2.1: There is a relationship between ‘cell phone bought by myself’ and mobile phone usage intensity. (8 sub-hypothesis for each mobile phone usage intensity scale attribute)
  - Hypothesis 2.1.1: There is a relationship between ‘cell phone bought by myself’ and ‘daily average number of calls received/sent’
  - Hypothesis 2.1.2: There is a relationship between ‘cell phone bought by myself’ and ‘daily average number of text messages received/sent’
  - Hypothesis 2.1.3: There is a relationship between ‘cell phone bought by myself’ and ‘total daily call duration of use’
  - Hypothesis 2.1.4: There is a relationship between ‘cell phone bought by myself’ and ‘monthly paid mobile invoice amount’
  - Hypothesis 2.1.5: There is a relationship between ‘cell phone bought by myself’ and ‘typical time of cell phone use in morning’
  - Hypothesis 2.1.6: There is a relationship between ‘cell phone bought by myself’ and ‘typical time of cell phone use in noon’

- Hypothesis 2.1.7: There is a relationship between ‘cell phone bought by myself’ and ‘typical time of cell phone use in evening’
- Hypothesis 2.1.8: There is a relationship between ‘cell phone bought by myself’ and ‘typical time of cell phone use at night’

- Hypothesis 2.2: There is a relationship between ‘smartphone ownership’ and mobile phone usage intensity. (4 sub-hypothesis for each mobile phone usage intensity scale attribute)
  - Hypothesis 2.2.1: There is a relationship between ‘smartphone ownership’ and ‘daily average number of calls received/sent’
  - Hypothesis 2.2.2: There is a relationship between ‘smartphone ownership’ and ‘daily average number of text messages received/sent’
  - Hypothesis 2.2.3: There is a relationship between ‘smartphone ownership’ and ‘total daily call duration of use’
  - Hypothesis 2.2.4: There is a relationship between ‘smartphone ownership’ and ‘monthly paid mobile invoice amount’
- Hypothesis 2.3: There is a relationship between ‘total cell phone ownership duration’ and mobile phone usage intensity. (8 sub-hypothesis for each mobile phone usage intensity scale attribute)
  - Hypothesis 2.3.1: There is a relationship between ‘total cell phone ownership duration’ and ‘daily average number of calls received/sent’
  - Hypothesis 2.3.2: There is a relationship between ‘total cell phone ownership duration’ and ‘daily average number of text messages received/sent’

- Hypothesis 2.3.3: There is a relationship between ‘total cell phone ownership duration’ and ‘total daily call duration of use’
- Hypothesis 2.3.4: There is a relationship between ‘total cell phone ownership duration’ and ‘monthly paid mobile invoice amount’
- Hypothesis 2.3.5: There is a relationship between ‘total cell phone ownership duration’ and ‘typical time of cell phone use in morning’
- Hypothesis 2.3.6: There is a relationship between ‘total cell phone ownership duration’ and ‘typical time of cell phone use in noon’
- Hypothesis 2.3.7: There is a relationship between ‘total cell phone ownership duration’ and ‘typical time of cell phone use in evening’
- Hypothesis 2.3.8: There is a relationship between ‘total cell phone ownership duration’ and ‘typical time of cell phone use at night’

- Hypothesis 2.4: There is a relationship between ‘mobile operator satisfaction’ and mobile phone usage intensity (8 sub-hypothesis for each mobile phone usage intensity scale attribute). This hypothesis has been applied to three mobile operators in Turkey (Turkcell, Vodafone and Avea).
  - Hypothesis 2.4.1: There is a relationship between ‘mobile operator satisfaction’ and ‘daily average number of calls received/sent’
  - Hypothesis 2.4.2: There is a relationship between ‘mobile operator satisfaction’ and ‘daily average number of text messages received/sent’
  - Hypothesis 2.4.3: There is a relationship between ‘mobile operator satisfaction’ and ‘total daily call duration of use’

- Hypothesis 2.4.4: There is a relationship between ‘mobile operator satisfaction’ and ‘monthly paid mobile invoice amount’
- Hypothesis 2.4.5: There is a relationship between ‘mobile operator satisfaction’ and ‘typical time of cell phone use in morning’
- Hypothesis 2.4.6: There is a relationship between ‘mobile operator satisfaction’ and ‘typical time of cell phone use in noon’
- Hypothesis 2.4.7: There is a relationship between ‘mobile operator satisfaction’ and ‘typical time of cell phone use in evening’
- Hypothesis 2.4.8: There is a relationship between ‘mobile operator satisfaction’ and ‘typical time of cell phone use at night’

Hypothesis 3: User behavior/Mobile phone usage intensity varies depending on user’s mobile phone functionality group membership.

- Hypothesis 3.1: There is a relationship between ‘mobile phone functionality group membership’ and ‘daily average number of calls received/sent’
- Hypothesis 3.2: There is a relationship between ‘mobile phone functionality group membership’ and ‘daily average number of text messages received/sent’
- Hypothesis 3.3: There is a relationship between ‘mobile phone functionality group membership’ and ‘total daily call duration of use’
- Hypothesis 3.4: There is a relationship between ‘mobile phone functionality group membership’ and ‘monthly paid mobile invoice amount’
- Hypothesis 3.5: There is a relationship between ‘mobile phone functionality group membership’ and ‘typical time of cell phone use in morning’

- Hypothesis 3.6: There is a relationship between ‘mobile phone functionality group membership’ and ‘typical time of cell phone use in noon’
- Hypothesis 3.7: There is a relationship between ‘mobile phone functionality group membership’ and ‘typical time of cell phone use in evening’
- Hypothesis 3.8: There is a relationship between ‘mobile phone functionality group membership’ and ‘typical time of cell phone use at night’

Hypothesis 4: User behavior/Mobile phone usage intensity varies depending on user’s ‘social & psychological purpose of use’ cluster membership.

- Hypothesis 4.1: There is a relationship between ‘cluster membership’ and ‘daily average number of calls received/sent’
- Hypothesis 4.2: There is a relationship between ‘cluster membership’ and ‘daily average number of text messages received/sent’
- Hypothesis 4.3: There is a relationship between ‘cluster membership’ and ‘total daily call duration of use’
- Hypothesis 4.4: There is a relationship between ‘cluster membership’ and ‘monthly paid mobile invoice amount’
- Hypothesis 4.5: There is a relationship between ‘cluster membership’ and ‘typical time of cell phone use in morning’
- Hypothesis 4.6: There is a relationship between ‘cluster membership’ and ‘typical time of cell phone use in noon’
- Hypothesis 4.7: There is a relationship between ‘cluster membership’ and ‘typical time of cell phone use in evening’
- Hypothesis 4.8: There is a relationship between ‘cluster membership’ and ‘typical time of cell phone use at night’

CHAPTER 4

RESEARCH METHODOLOGY

In this part of the thesis, the methodological base of the thesis: selected methodology, preparation of questionnaire, procedure of data collection, sampling issues and components of the questionnaire are covered.

Preparation of the Questionnaire

A quantitative survey methodology: ‘questionnaire’ has been developed after aggregating a set of items from the literature and generating a theoretical framework (see Figure 6).

The questionnaire covers the below sections:

- Cover: Aim of the study and confidentiality provisions.
- Section 1: Questions about demographic characteristics of the respondent.
- Section 2: Questions about cell phone usage characteristics of the respondent.
- Section 3: Questions about social purposes and physiological attitudes of the respondent.
- Section 4: Questions about used mobile phone functionalities of the respondent.
- Section 5: Questions to measure the mobile phone usage intensity and behavior of the respondent.

A panel of experts, namely Prof. Dr. Meltem Özturan and Assoc. Prof. Dr. Hande Kımıloğlu (faculty members at the MIS Department in Boğaziçi University) has been consulted to ensure that the understandability and measurement of the questionnaire are appropriate. Then, a pilot study has been established in TURKCELL (A GSM Company in Turkey) among 10 young employees. Using the both feedbacks from experts and young individuals, necessary wording and scale corrections have been done on survey.

Sampling and Data Collection

After finalization of the survey design, the questionnaire has been published online via a survey preparation tool provider web site. The questionnaire has been live online for one month. Data are collected by Internet channels. Respondents have been invited to fill in the survey by sending the survey link directly to their e-mail address, sharing the survey link on social media (Twitter and LinkedIn), Facebook collector and online dictionaries.

Convenience sampling (non-probability sampling design) has been used to gather information quickly and efficiently. The respondents of the survey are 18-30 years young individuals in Turkey who use the Internet.

All questions of the questionnaire are required an answer. So, respondents who completed the survey could not skip any questions. At the end of the data collection period, 462 respondents have started the survey but 431 respondents successfully completed all questions of the survey. These collected 431 responses by the survey were statistically analyzed using SPSS v. 18.

Components of the Questionnaire

The questionnaire is two pages long and takes about five minutes to complete. Turkish and English versions of the questionnaire are provided in Appendix A and Appendix B.

Questionnaire starts with a cover page that gives the aim of the study and confidentiality provisions of the survey. After the cover page, there are five sections of the questionnaire.

Part I covers the first six questions of the survey about demographic characteristics of respondents like: age, gender, personal/mother/father education levels and employment status.

Part II consists of five questions about cell phone usage characteristics of users like: who bought the mobile phone, smart phone ownership, total mobile phone ownership duration, location of mobile phone use and mobile operator satisfaction.

Part III includes a multi item scale question about social and psychological attitudes of the users about why they use a mobile phone.

Part IV consists of a multi item question about which functionalities of the mobile phones are used by the young users.

Finally, last part of the questionnaire Part V consists of five questions to measure the mobile phone usage intensity of the young individuals. Part V questions cover the dependent variable of the framework (see Figure6).

Types of scales used for each question can be seen in Table 5 below.

Table 5. Scale Types of The Survey Questions

Question Number	Description	Scale Type	Section
1	Age	Ratio	PART I
2	Gender	Nominal	PART I
3	Education level	Ordinal	PART I
4	Mother education level	Ordinal	PART I
5	Father education level	Ordinal	PART I
6	Employment status	Ordinal	PART I
7	Cell phone bought by myself	Nominal	PART II
8	Smartphone ownership	Nominal	PART II
9	Total cell phone ownership duration	Ordinal	PART II
10	Location of cell phone use	Ordinal	PART II
11	Mobile operator satisfaction	Interval	PART II
12	Social and Psychological purposes	Interval	PART III
13	Mobile phone functionalities	Nominal	PART IV
14	Daily average number of calls received/sent	Ordinal	PART V
15	Daily average number of text messages received/sent	Ordinal	PART V
16	Total daily call duration of cell phone use	Ordinal	PART V
17	Monthly paid mobile invoice amount	Ordinal	PART V
18	Typical time of cell phone use	Interval	PART V

CHAPTER 5

ANALYSES AND FINDINGS

In this chapter, hypothesis testing results of the statistical analyses are discussed starting from descriptive analyses, followed by scale reliabilities, cross-tab analysis and cluster analysis to test the research hypotheses.

Before starting to hypothesis testing phase, frequency run has been applied to the collected data for each variable in the questionnaire to check the existence of any misused data or error. As a result of frequency runs, all selected responses (431 responses) are found to be applicable for the analyses.

Descriptive Statistics

Frequency Analyses of Demographic Characteristics

Frequency analyses have been performed for demographic characteristics: age, gender, employment status and personal & family education levels to see the profile of the target young mobile phone users. Demographic characteristics of the young respondents can be seen from Table 6 below.

Table 6. Frequency Analyses of Demographic Characteristics

Age	18-20	21-23	24-26	27-30	
	71	165	121	74	
	16,5%	38,3%	28,1%	17,1%	
Gender	Female	Male			
	197	234			
	45.7%	54.3%			
Personal Education Level	Primary school	High school	Undergraduate Degree	Graduate Degree	Doctoral Degree
	3	11	295	103	19
	0.7%	2.6%	68.4%	23.9%	4.4%
Mother Education Level	Primary school	High school	Undergraduate Degree	Graduate Degree	Doctoral Degree
	170	123	120	10	8
	39.4%	28.5%	27.8%	2.3%	1.9%
Father Education Level	Primary school	High school	Undergraduate Degree	Graduate Degree	Doctoral Degree
	97	130	171	18	15
	22.5%	30.2%	39.7%	4.2%	3.5%
Employment Status	Not working	Part-time	Full-time		
	219	46	166		
	50.8%	10.7%	38.5%		

It may be seen from Table 6 that the greatest number of individuals in the sample are in their twenties 21-26 (66%), lower and upper groups of this interval “both 18-20 and 27-30 age groups” are almost in same sampling size as 17% of all. Furthermore, none of the respondents are older than 30 years old.

It is found that 54% of the respondents are male and 46% of the respondents are male, as shown in Table 6. Similarity in the gender distribution of the young respondents is an advantage for the gender related hypothesis.

There are 14 individuals who have pre-high school or high school diploma (4%) and 417 individuals who attend university and upper degree (96%). These findings show that the sample is well-educated, as shown in Table 6.

As far as parental education level is concerned, mother and father education levels of the respondents are reflection of Turkey’s parental education level

according to gender difference. Education level of fathers' of the respondents is higher than mothers' education level. 293 mothers of respondents have under university degree with 68% and 138 mothers of respondents have university and upper degree with 32%. On the other hand, fathers are better as 227 individuals have under university degree with 53%, 204 individuals have university and upper degree with 47%, as shown in Table 6.

In addition to these characteristics, employment status of the young respondents is also an important issue. As seen in Table 6, working and not-working distribution of the sample is homogeneous. 51% of the respondents are not working, 49% of the respondents are working as part-time or full-time.

Frequency Analyses of Cell Phone Usage Characteristics

Frequency analyses have been also performed for some cell phone usage characteristics: cell phone self-bought, smartphone ownership, cell phone ownership duration and mobile operator satisfaction. Frequency analysis results of those cell phone usage characteristics except 'mobile operator satisfaction' of the young respondents can be seen from Table 7 below.

Table 7. Frequency Analyses of Cell Phone Usage Characteristics

Cellphone self-bought	Yes	No			
	215	216			
	49.9%	50.1%			
Smartphone Ownership	Yes	No			
	274	157			
	63.6%	36.4%			
Cellphone Ownership Duration	1-3 years	3-6 years	6-9 years	9 years and over	
	4	43	158	226	
	0.9%	10.0%	36.7%	52.4%	

According to Table 7 results, half of the respondents (215 individuals) have bought their mobile phones by themselves. This distribution is very useful for testing the related hypothesis.

Another cell phone usage characteristic is smart phone ownership of the young users. 64% of the respondents have smart phone as seen in Table 7. This is important for testing of the used mobile phone functionality hypothesis because smart phones have more functionalities than other simple mobile phones.

It is found that 52% of the respondents have a mobile phone since 9 years and over as it can be seen in Table 7. This means that Turkey's young generation likes mobile phones and they are also open to the developments in mobile technology.

Lastly, frequency analysis has been also performed for mobile operator satisfaction characteristic of the users. In Turkey, there are three active mobile operators: Turkcell, Vodafone and Avea. Table 8 below gives the percentage of mobile operator satisfaction results in the survey. According to Table 8; 80% of young respondents use Turkcell, 70% of them use Avea and 50% of them use Vodafone. From these results, the most preferable mobile operator seems 'Turkcell'. Furthermore, satisfaction level of each operator is different. 67% of respondents have stated that their Turkcell satisfaction level is normal and over satisfied. 32.5% of respondents have stated that their Vodafone satisfaction level is normal and over satisfied. Lastly, 47.3% of respondents have stated that their Avea satisfaction level is normal and over satisfied.

Table 8. Frequency Analyses of Mobile Operator Satisfaction

	Not satisfied	Less satisfied	Normal	Satisfied	Very satisfied	Using	Not using	Total
Turkcell	19	35	92	106	91	343	88	431
	4.4%	8.1%	21.3%	24.6%	21.1%	79.6%	20.4%	100.0%
Vodafone	28	47	77	44	19	215	216	431
	6.5%	10.9%	17.9%	10.2%	4.4%	49.9%	50.1%	100.0%
Avea	38	58	116	63	25	300	131	431
	8.8%	13.5%	26.9%	14.6%	5.8%	69.6%	30.4%	100.0%

Frequency Analyses of Used Mobile Phone Functionalities

Part IV of the questionnaire (See Appendix A) consists of a multi item Yes-No question set to measure the user profiles according to number of used mobile phone functionalities and to test the Hypothesis 3.

16 different mobile phone functionalities exist in the scale. These mobile phone functionalities are as follows: call send/receive, SMS/MMS, 3G/4G support, camera, MP3 player, video recording and watching, blue tooth, wireless, social media applications, email applications, game support, calendar, reminder and alarm, application store, Google maps and document reader applications.

Before starting for the frequency analyses for number of used mobile phone functionalities, a new variable generated according to number of 'Yes' answers of the respondents to this 16 multi-item scale to count the number of used mobile phone functionalities. Then, frequency analyses have been performed for this new

generated variable to see the frequency of the used functionalities. Results of analysis can be seen in Table 9 below.

Table 9. Frequency Analysis for Number of Used Mobile Phone Functionalities

Mobile Phone Functionality - Number Of 'Yes'					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	1	,2	,2	,2
	2,00	2	,5	,5	,7
	3,00	6	1,4	1,4	2,1
	4,00	15	3,5	3,5	5,6
	5,00	7	1,6	1,6	7,2
	6,00	11	2,6	2,6	9,7
	7,00	18	4,2	4,2	13,9
	8,00	15	3,5	3,5	17,4
	9,00	21	4,9	4,9	22,3
	10,00	25	5,8	5,8	28,1
	11,00	34	7,9	7,9	36,0
	12,00	29	6,7	6,7	42,7
	13,00	43	10,0	10,0	52,7
	14,00	47	10,9	10,9	63,6
	15,00	68	15,8	15,8	79,4
	16,00	89	20,6	20,6	100,0
	Total	431	100,0	100,0	

According to Table 9, 20.6% of the respondents use all of the given functionalities; this is the biggest percentage value in the percent column. It means that users have tendency to use all of the functionalities on the mobile phones, this result has parallelism with smartphone ownership issue because smartphones have most powerful functionality in today's mobile world. As it has seen in Table 7 before, smartphone ownership percentage of young individuals is 63.6%.

Internal Consistency of Scales

In this part, internal consistency of the collected responses to all of the items in an interval scale has been tested. Cronbach's coefficient alpha is used for 5-point scaled items to test the reliabilities. According to Cronbach's alpha, intercorrelations among test items are maximized when all items measure the same construct and consistency levels of the scales change with a "α" value. Levels of the stated consistency can be seen from Table 10 below.

Table 10. Internal Consistency Levels of Cronbach's Alpha.

Cronbach's alpha	Internal consistency
$\alpha \geq 0.9$	Excellent (High-Stakes testing)
$0.8 \leq \alpha < 0.9$	Good (Low-Stakes testing)
$0.7 \leq \alpha < 0.8$	Acceptable (Surveys)
$0.6 \leq \alpha < 0.7$	Questionable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

Social Purposes & Physiological Attitudes Scale

Part III of the questionnaire (See Appendix A) includes a 5-point scaled multi item question about social purposes and psychological attitudes of the young users about why they use a mobile phone. These 14 items are listed below:

- Social Purposes - Social Interaction
- Social Purposes - Parental Contacts
- Social Purposes - Personal Safety
- Social Purposes - Financial Incentive

- Social Purposes – Information Access
- Social Purposes - Time Management and Coordination
- Social Purposes - Privacy Management
- Psychological Attitude - Personal Image Care
- Psychological Attitude - Mobile Phone Dependency
- Psychological Attitude - Text Messaging Like Gift Exchange
- Psychological Attitude - Feel More Secure In Case of Emergency
- Psychological Attitude - Feel More Informed
- Psychological Attitude – Feel Accompanied
- Psychological Attitude – Protected From Theft

Cronbach's coefficient alpha reliability test has been applied to this multi-item interval scale to see the internal consistency. Cronbach's alpha is above .80 for Social Purposes & Physiological Attitudes Scale which is considered to be good as seen in Table 11 below.

Table 11. Cronbach's Alpha of Social Purposes & Physiological Attitudes Scale

Reliability Statistics	
Cronbach's Alpha	N of Items
,833	14

Hypotheses Testing and Relational Findings

In this part, cross-tab chi-square and cluster analysis are used to find out the relationships between independent variables and user behavior (mobile phone usage intensity) in the research model.

Chi-Square Tests for Demographic Characteristics

Chi-square test has been applied to test the Hypothesis 1: "User behavior/Mobile phone usage intensity changes according to demographic characteristics" and its sub-hypotheses.

First of all, gender and user behavior relationship (hypothesis 1.1 and its sub-hypotheses) has been tested. Table 12 portrays results of tests and related variables below. According to Table 12, none of the relationships between gender and user behavior items are supported because significance is greater than 0.05 for each sub-hypothesis.

Table 12. Testing Results of Hypothesis 1.1 and Its Sub-hypotheses

Hypothesis #	Independent Variable	Dependent Variable	Type of Test	Result
1.1.1.	Gender	Daily Average Number of Calls Received and Sent	Cross-tab (chi-square)	Not substantiated (λ^2= 2.743, sig.= 0.602)
1.1.2.		Daily Average Number of Text Messages Received and Sent		Not substantiated (λ^2= 9.488, sig.= 0.091)
1.1.3.		Total Daily Call Duration		Not substantiated (λ^2= 4.095, sig.= 0.251)
1.1.4.		Monthly Paid Mobile Invoice Amount		Not substantiated (λ^2= 3.259, sig.= 0.353)
1.1.5.		Time of Cell Phone Use - Morning		Not substantiated (λ^2= 3.192, sig.= 0.526)
1.1.6.		Time of Cell Phone Use - Noon		Not substantiated (λ^2= 7.527, sig.= 0.111)
1.1.7.		Time of Cell Phone Use - Evening		Not substantiated (λ^2= 6.077, sig.= 0.193)
1.1.8.		Time of Cell Phone Use - Night		Not substantiated (λ^2= 3.518, sig.= 0.475)

Secondly, employment status and user behavior relationship (hypothesis 1.2 and its sub-hypotheses) has been tested. Table 13 gives results of tests and related variables. As it can be seen in Table 13 below; with the λ^2 value of 44.533 hypothesis 1.2.2, with the λ^2 value of 51.974 hypothesis 1.2.4 and with the λ^2 value of 26.117 hypothesis 1.2.5 are supported.

Table 13. Testing Results of Hypothesis 1.2 and Its Sub-hypotheses

Hypothesis#	Independent Variable	Dependent Variable	Type of Test	Result
1.2.1.	Employment Status	Daily Average Number of Calls Received and Sent	Cross-tab (chi-square)	Not substantiated (λ^2= 11.029, sig.= 0.200)
1.2.2.		Daily Average Number of Text Messages Received and Sent		Substantiated (λ^2= 44.533, sig.= 0. 000)(*)
1.2.3.		Total Daily Call Duration		Not substantiated (λ^2= 4.055, sig.= 0.669)
1.2.4.		Monthly Paid Mobile Invoice Amount		Substantiated (λ^2= 51.974, sig.= 0.000)(*)
1.2.5.		Time of Cell Phone Use - Morning		Substantiated (λ^2= 26.117, sig.= 0.001)(*)
1.2.6.		Time of Cell Phone Use - Noon		Not substantiated (λ^2= 4.553, sig.= 0.804)
1.2.7.		Time of Cell Phone Use - Evening		Not substantiated (λ^2= 7.447, sig.= 0.489)
1.2.8.		Time of Cell Phone Use - Night		Not substantiated (λ^2= 11.069, sig.= 0.198)

Hypothesis 1.2.2 states that “There is a relationship between employment status and daily average number of text messages received/sent”. Table 14 below portrays the cross-tab result of the hypothesis. According to Table 14, while full time working users are sending only 1-10 SMS in a day, not-working users are sending more than 10 SMS. All the intervals except 1-10 SMS are occupied by not-working users. As a result, daily average number of text messages varies in the opposite direction of increasing employment level.

Table 14. Cross-tab Between ‘Employment Status’ and ‘Daily Average Number of Text Messages Received/Sent’

Crosstab						
Daily average # of text messages			Employment Status			Total
			Not-working	Full time	Part time	
	1-10 SMS	Count	69	99	18	186
		%	37,10%	53,20%	9,70%	100,00%
	11-20 SMS	Count	51	37	5	93
		%	54,80%	39,80%	5,40%	100,00%
	21-50 SMS	Count	46	17	11	74
		%	62,20%	23,00%	14,90%	100,00%
	51-100 SMS	Count	30	7	6	43
		%	69,80%	16,30%	14,00%	100,00%
	101-200 SMS	Count	14	4	3	21
		%	66,70%	19,00%	14,30%	100,00%
	More than 200 SMS	Count	9	2	3	14
		%	64,30%	14,30%	21,40%	100,00%
Total		Count	219	166	46	431
		%	50,80%	38,50%	10,70%	100,00%

Another accepted hypothesis 1.2.4 suggests that “There is a relationship between ‘employment status’ and ‘monthly paid mobile invoice amount”. Table 15 gives the distribution of the users according to their paid amount levels. Almost half of the respondents (210 users) pay for mobile 21-50 TL monthly. Furthermore, not-working

users pay 0-50 TL for mobile but full time working users pay more than 50 TL in fact more than 100 TL monthly.

Table 15. Cross-tab Between 'Employment Status' and 'Monthly Paid Mobile Invoice Amount'

Monthly mobile invoice amount		Employment Status			Total
		Not-working	Full time	Part time	
0-20 TL	Count	62	25	16	103
	%	60,20%	24,30%	15,50%	100,00%
21-50 TL	Count	123	65	22	210
	%	58,60%	31,00%	10,50%	100,00%
50-100TL	Count	27	52	3	82
	%	32,90%	63,40%	3,70%	100,00%
More than 100 TL	Count	7	24	5	36
	%	19,40%	66,70%	13,90%	100,00%
Total	Count	219	166	46	431
	%	50,80%	38,50%	10,70%	100,00%

Last accepted hypothesis in the same group, hypothesis 1.2.5 suggests that "There is a relationship between employment status and typical time of cell phone use (morning)". Table 16 displays that while not-working young users are using mobile phone rarely or sometimes in the mornings, full time working users are using mobile phone frequently in the mornings.

Table 16. Cross-tab Between 'Employment Status' and 'Typical Time of Cell Phone Use - Morning'

Cell phone use in mornings		Employment Status			Total
		Not-working	Full time	Part time	
Rarely	Count	121	71	19	211
	%	57,30%	33,60%	9,00%	100,00%
Sometimes	Count	64	48	18	130
	%	49,20%	36,90%	13,80%	100,00%
Normal	Count	23	34	7	64
	%	35,90%	53,10%	10,90%	100,00%
Frequently	Count	10	13	0	23
	%	43,50%	56,50%	0,00%	100,00%
Very frequently	Count	1	0	2	3
	%	33,30%	0,00%	66,70%	100,00%
Total	Count	219	166	46	431
	%	50,80%	38,50%	10,70%	100,00%

Thirdly, education level and user behavior relationship (hypothesis 1.3 and Its Sub-hypotheses) has been tested. Table 17gives the results of tests and related variables below.

Table 17. Testing Results of Hypothesis 1.3 and Its Sub-hypotheses

Hypothesis#	Independent Variable	Dependent Variable	Type of Test	Result
1.3.1.	Personal Education Level	Daily Average Number of Calls Received and Sent	Cross-tab (chi-square)	Not substantiated (λ^2= 18.818, sig.= 0.278)
1.3.2.		Daily Average Number of Text Messages Received and Sent		Substantiated (λ^2= 49.981, sig.= 0.000)(*)
1.3.3.		Total Daily Call Duration		Not substantiated (λ^2= 12.787, sig.= 0.385)
1.3.4.		Monthly Paid Mobile Invoice Amount		Not substantiated (λ^2= 12.673, sig.= 0.393)

According to significance values in Table 17, hypothesis 1.3.2 is supported. Hypothesis 1.3.2 states that "There is a relationship between 'personal education level' and 'daily average number of text messages received/sent'". Table 18 portrays that almost half of the users take place in 1-10 SMS row and percentage of the users in this row are ascending as parallel to education level. 35% of undergraduate users, 62% of graduate users and 79% of doctoral degree users are sending 1-10 SMS daily in an ascending manner. This means that personal education level and daily average number of text messages have an opposite relationship. While personal education level is ascending, daily average number of text messages is decreasing.

Table 18. Cross-tab Between 'Personal Education Level' and 'Daily Average Number of Text Messages Received/Sent'

Daily average number of text messages		Personal Education Level					Total
		Primary School	High School	Under graduate	Graduate Degree	Doctoral Degree	
1-10 SMS	Count	1	2	104	64	15	186
	%	33,30%	18,20%	35,30%	62,10%	78,90%	43,20%
11-20 SMS	Count	1	2	72	15	3	93
	%	33,30%	18,20%	24,40%	14,60%	15,80%	21,60%
21-50 SMS	Count	1	3	55	15	0	74
	%	33,30%	27,30%	18,60%	14,60%	0,00%	17,20%
51-100 SMS	Count	0	4	33	6	0	43
	%	0,00%	36,40%	11,20%	5,80%	0,00%	10,00%
101-200 SMS	Count	0	0	18	3	0	21
	%	0,00%	0,00%	6,10%	2,90%	0,00%	4,90%
More than 200 SMS	Count	0	0	13	0	1	14
	%	0,00%	0,00%	4,40%	0,00%	5,30%	3,20%
Total	Count	3	11	295	103	19	431
	%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%

Furthermore, mother's education level and user behavior relationship (hypothesis 1.4 and its sub-hypotheses) has also been tested. Table 19 gives the results of tests and related variables.

Table 19. Testing Results of Hypothesis 1.4 and Its Sub-hypotheses

Hypothesis#	Independent Variable	Dependent Variable	Type of Test	Result
1.4.1.	Mother's Education Level	Daily Average Number of Calls Received and Sent	Cross-tab (chi-square)	Not substantiated (λ^2= 12.300, sig.= 0.723)
1.4.2.		Daily Average Number of Text Messages Received and Sent		Not substantiated (λ^2= 18.679, sig.= 0.543)
1.4.3.		Total Daily Call Duration		Substantiated (λ^2= 29.372, sig.= 0.003)(*)
1.4.4.		Monthly Paid Mobile Invoice Amount		Substantiated (λ^2= 31.352, sig.= 0.002)(*)

According to Table 19, hypothesis 1.4.3 and hypothesis 1.4.4 are supported. Hypothesis 1.4.3 states that "There is a relationship between 'mother's education level' and 'total daily call duration of use'". As it can be seen in Table 20 below, 84% of the respondents have answered the call duration question as 0-60 minutes; it means that intervals of the call duration question are not very suitable. Respondents in all education levels have been collected into same intervals in Table 20. It would be better if intervals were smaller like 0-30 minutes, 30-60 minutes etc. For this reason, hypothesis 1.4.3 relationship may be ignored and it is concluded that 84% of young respondents are making daily 0-60 minutes calls.

Table 20. Cross-tab Between ‘Mother’s Education Level’ and ‘Total Daily Call Duration of Use’

Daily call duration		Mother Education Level					Total
		Primary School	High School	Under graduate	Graduate Degree	Doctoral Degree	
0-60 mins	Count	141	104	103	8	7	363
	%	38,80%	28,70%	28,40%	2,20%	1,90%	100,00%
60-120 mins	Count	26	17	16	2	0	61
	%	42,60%	27,90%	26,20%	3,30%	0,00%	100,00%
120-180 mins	Count	3	1	1	0	0	5
	%	60,00%	20,00%	20,00%	0,00%	0,00%	100,00%
More than 180 mins	Count	0	1	0	0	1	2
	%	0,00%	50,00%	0,00%	0,00%	50,00%	100,00%
Total	Count	170	123	120	10	8	431
	%	39,40%	28,50%	27,80%	2,30%	1,90%	100,00%

Another supported hypothesis 1.4.4 is: “There is a relationship between ‘mother’s education level’ and ‘monthly paid mobile invoice amount’”. As it can be seen in Table 21, monthly paid mobile amount are increasing as parallel to mother’s education level.

Table 21. Cross-tab Between ‘Mother’s Education Level’ and ‘Monthly Paid Mobile Invoice Amount’

Monthly Mobile Invoice Amount		Mother Education Level					Total
		Primary School	High School	Under graduate	Graduate Degree	Doctoral Degree	
0-20 TL	Count	55	31	17	0	0	103
	%	53,40%	30,10%	16,50%	0,00%	0,00%	100,00%
21-50 TL	Count	79	63	60	5	3	210
	%	37,60%	30,00%	28,60%	2,40%	1,40%	100,00%
50-100TL	Count	24	17	34	4	3	82
	%	29,30%	20,70%	41,50%	4,90%	3,70%	100,00%
More than 100 TL	Count	12	12	9	1	2	36
	%	33,30%	33,30%	25,00%	2,80%	5,60%	100,00%
Total	Count	170	123	120	10	8	431
	%	39,40%	28,50%	27,80%	2,30%	1,90%	100,00%

Lastly in the demographic characteristics group, father's education level and user behavior relationship (hypothesis 1.5 and its sub-hypotheses) has also been tested. Table 22 gives the results of tests and related variables. Results of the father education level hypotheses are parallel with mother education level hypotheses.

Table 22. Testing Results of Hypothesis 1.5 and Its Sub-hypotheses

Hypothesis#	Independent Variable	Dependent Variable	Type of Test	Result
1.5.1.	Father's Education Level	Daily Average Number of Calls Received and Sent	Cross-tab (chi-square)	Not substantiated (λ^2= 14.252, sig.= 0.580)
1.5.2.		Daily Average Number of Text Messages Received and Sent		Not substantiated (λ^2= 9.822, sig.= 0.971)
1.5.3.		Total Daily Call Duration		Substantiated (λ^2= 21.507, sig.= 0.043)
1.5.4.		Monthly Paid Mobile Invoice Amount		Substantiated (λ^2= 29.308, sig.= 0.004)

According to Table 22, hypothesis 1.5.3 and hypothesis 1.5.4 are satisfied. Hypothesis 1.5.3 suggests that "There is a relationship between 'father's education level' and 'total daily call duration of use'". Result of this hypothesis is same as hypothesis 1.4.3 as it can be seen in Table 23. Respondents are mostly from 0-60 minute's interval.

Table 23. Cross-tab Between ‘Father’s Education Level’ and ‘Total Daily Call Duration of Use’

Daily call duration		Father Education Level					Total
		Primary School	High School	Under graduate	Graduate Degree	Doctoral Degree	
0-60 mins	Count	78	114	142	16	13	363
	%	21,50%	31,40%	39,10%	4,40%	3,60%	100,00%
60-120 mins	Count	15	16	27	2	1	61
	%	24,60%	26,20%	44,30%	3,30%	1,60%	100,00%
120-180 mins	Count	3	0	2	0	0	5
	%	60,00%	0,00%	40,00%	0,00%	0,00%	100,00%
More than 180 mins	Count	1	0	0	0	1	2
	%	50,00%	0,00%	0,00%	0,00%	50,00%	100,00%
Total	Count	97	130	171	18	15	431
	%	22,50%	30,20%	39,70%	4,20%	3,50%	100,00%

Another accepted one, Hypothesis 1.5.4 is “There is a relationship between ‘father’s education level’ and ‘monthly paid mobile invoice amount’”. As it can be seen in Table 24, result of this hypothesis is also parallel with hypothesis 1.4.4. Monthly paid mobile amount is increasing as parallel to father education level.

Table 24. Cross-tab Between ‘Father’s Education Level’ and ‘Monthly Paid Mobile Invoice Amount’

Monthly Mobile Invoice Amount		Father Education Level					Total
		Primary School	High School	Under graduate	Graduate Degree	Doctoral Degree	
0-20 TL	Count	32	35	32	3	1	103
	%	31,10%	34,00%	31,10%	2,90%	1,00%	100,00%
21-50 TL	Count	42	70	82	11	5	210
	%	20,00%	33,30%	39,00%	5,20%	2,40%	100,00%
50-100TL	Count	16	14	45	2	5	82
	%	19,50%	17,10%	54,90%	2,40%	6,10%	100,00%
More than 100 TL	Count	7	11	12	2	4	36
	%	19,40%	30,60%	33,30%	5,60%	11,10%	100,00%
Total	Count	97	130	171	18	15	431
	%	22,50%	30,20%	39,70%	4,20%	3,50%	100,00%

Chi-Square Tests for Cell Phone Usage Characteristics

Second part of the hypotheses testing is about the cell phone usage characteristics of the users. Hypothesis 2 suggests that "User behavior/Mobile phone usage intensity changes according to mobile phone usage characteristics". There are five groups of sub-hypotheses covered by Hypothesis 2. Testing result of each hypothesis has been explained in order.

Firstly, Hypothesis 2.1 states that "There is a relationship between 'cell phone bought by myself' and mobile phone usage intensity". Results of the chi-square testing for each sub-hypothesis are given below in Table 25. According to Table 25, only hypothesis 2.1.4 is supported with the λ^2 value of 11.274 and 0.010 significance value.

Table 25. Testing Results of Hypothesis 2.1 and Its Sub-hypotheses

Hypothesis#	Independent Variable	Dependent Variable	Type of Test	Result
2.1.1.	Cell Phone Bought By Myself	Daily Average Number of Calls Received and Sent	Cross-tab (chi-square)	Not substantiated
2.1.2.		Daily Average Number of Text Messages Received and Sent		Not substantiated
2.1.3.		Total Daily Call Duration		Not substantiated
2.1.4.		Monthly Paid Mobile Invoice Amount		Substantiated (λ^2= 11.274, sig.= 0.010)(*)
2.1.5.		Time of Cell Phone Use - Morning		Not substantiated
2.1.6.		Time of Cell Phone Use - Noon		Not substantiated
2.1.7.		Time of Cell Phone Use - Evening		Not substantiated
2.1.8.		Time of Cell Phone Use - Night		Not substantiated

Cross-tab result table of hypothesis 2.1.4 is given below in Table 26. As it can be seen in the table, number of respondents who bought his/her mobile phone by her/himself is half of the total. For 0-20 TL interval, number of answers 'No' is more than answers 'Yes'. It means that young users, who have a present mobile phone, pay less for mobile. On the other hand, for other three intervals higher than 0-20 TL, percentage of the cell bought by myself percentage is higher than the other group's percentage. It also means that a young user, who buys own mobile phone, pays much more for mobile usage.

Table 26. Cross-tab Between 'Cell Phone Bought by Myself' and 'Monthly Paid Mobile Invoice Amount'

Monthly paid mobile amount		Cellphone Bought By Myself		Total
		Yes	No	
0-20 TL	Count	38	65	103
	%	17,70%	30,10%	23,90%
21-50 TL	Count	107	103	210
	%	49,80%	47,70%	48,70%
50-100TL	Count	49	33	82
	%	22,80%	15,30%	19,00%
More than 100 TL	Count	21	15	36
	%	9,80%	6,90%	8,40%
Total	Count	215	216	431
	%	100,00%	100,00%	100,00%

Secondly, Hypothesis 2.2 suggests that "There is a relationship between 'smartphone ownership' and mobile phone usage intensity". Results of the chi-square testing for each sub-hypothesis are given below in Table 27. According to Table 27, only hypothesis 2.2.4 is supported with the λ^2 value of 62.055 and 0.000 significance value.

Table 27. Testing Results of Hypothesis 2.2 and Its Sub-hypotheses

Hypothesis#	Independent Variable	Dependent Variable	Type of Test	Result
2.2.1.	Smartphone Ownership	Daily Average Number of Calls Received and Sent	Cross-tab (chi-square)	Not substantiated
2.2.2.		Daily Average Number of Text Messages Received and Sent		Not substantiated
2.2.3.		Total Daily Call Duration		Not substantiated
2.2.4.		Monthly Paid Mobile Invoice Amount		Substantiated (λ^2= 62.055, sig.= 0.000)(*)

Cross-tab result of the hypothesis 2.2.4 is given in Table 28. As it can be seen in the table below, %62 of 103 young respondents in 0-20 TL interval has not a smart phone. On the other hand, upper intervals than 0-20 TL, percentage of the smart phone owners is higher than other group. This means that, smart phone owners pay much more for their monthly mobile phone usage.

Table 28. Cross-tab Between 'Smartphone Ownership' and 'Monthly Paid Mobile Invoice Amount'

Monthly Mobile Invoice Amount		Smartphone Ownership		Total
		Yes	No	
0-20 TL	Count	40	63	103
	%	38,80%	61,20%	100,00%
21-50 TL	Count	129	81	210
	%	61,40%	38,60%	100,00%
50-100TL	Count	70	12	82
	%	85,40%	14,60%	100,00%
More than 100 TL	Count	35	1	36
	%	97,20%	2,80%	100,00%
Total	Count	274	157	431
	%	63,60%	36,40%	100,00%

Thirdly, Hypothesis 2.3 states that "There is a relationship between 'total cell phone ownership duration' and mobile phone usage intensity". Results of the chi-square testing for each sub-hypothesis are given below in Table 29. As it can be seen in Table 29 below, only hypothesis 2.3.4 is substantiated with the λ^2 value of 45.231 and 0.000 significance value.

Table 29. Testing Results of Hypothesis 2.3 and Its Sub-hypotheses

Hypothesis#	Independent Variable	Dependent Variable	Type of Test	Result
2.3.1.	Total Cell Phone Ownership Duration	Daily Average Number of Calls Received and Sent	Cross-tab (chi-square)	Not substantiated
2.3.2.		Daily Average Number of Text Messages Received and Sent		Not substantiated
2.3.3.		Total Daily Call Duration		Not substantiated
2.3.4.		Monthly Paid Mobile Invoice Amount		Substantiated (λ^2= 45.231, sig.= 0.000)(*)
2.3.5.		Time of Cell Phone Use - Morning		Not substantiated
2.3.6.		Time of Cell Phone Use - Noon		Not substantiated
2.3.7.		Time of Cell Phone Use - Evening		Not substantiated
2.3.8.		Time of Cell Phone Use - Night		Not substantiated

Cross-tab result of the hypothesis 2.3.4 is given in Table 30. As it can be seen in the cross-tab table, half of the respondents (226 young people) have a mobile phone more than 9 years. In 3-6 years ownership duration, respondents pay 0-50 TL for mobile. As parallel to the mobile phone ownership duration, monthly paid mobile invoice amount is ascending and percentage in the 0-50 TL interval moves to the 50 – Over 100 TL intervals.

Table 30. Cross-tab Between 'Total Cell Phone Ownership Duration' and 'Monthly Paid Mobile Invoice Amount'

Monthly paid amount		Total Cellphone Ownership Duration				Total
		1-3 years	3-6 years	6-9 years	More than 9 years	
0-20 TL	Count	0	20	48	35	103
	%	0,00%	46,50%	30,40%	15,50%	23,90%
21-50 TL	Count	4	22	78	106	210
	%	100,00%	51,20%	49,40%	46,90%	48,70%
50-100TL	Count	0	1	24	57	82
	%	0,00%	2,30%	15,20%	25,20%	19,00%
More than 100 TL	Count	0	0	8	28	36
	%	0,00%	0,00%	5,10%	12,40%	8,40%
Total	Count	4	43	158	226	431
	%	100,00%	100,00%	100,00%	100,00%	100,00%

Last hypothesis in cell phone usage characteristics group is Hypothesis 2.4. It states that "There is a relationship between 'mobile operator satisfaction' and mobile phone usage intensity". There are 8 sub-hypotheses in this group. Each sub-hypothesis has been applied to each mobile operator as seen in Table 31, 32 and 33 below. Frequency analyses for mobile operator satisfaction levels are also given before in Table 8.

As it can be seen in Table 31 below, Hypothesis 2.4.1, 2.4.3, 2.4.4, 2.4.6 and 2.4.7 are supported for Turkcell. From the results of the cross-tab tables for these hypotheses, behavior of Turkcell customers could be summarized as follows:

- Most of the young Turkcell customers (259 respondents in 343 Turkcell customers) are making average 1-10 calls daily.
- Most of the young Turkcell customers (282 respondents in 343 Turkcell customers) are having 0-60 minutes call duration daily.

- Most of the young Turkcell customers (248 respondents in 343 Turkcell customers) pay for mobile 20-100 TL monthly.
- Highly satisfied young Turkcell customers are using their mobile phone much more in noon.
- Most of the young Turkcell customers in each satisfaction level use their mobile phone very frequently in evenings.

Table 31. Testing Results of Hypothesis 2.4 and Its Sub-hypotheses for Operator Turkcell

Hypothesis#	Independent Variable	Dependent Variable	Type of Test	Result
2.4.1.	Mobile Operator Satisfaction - Turkcell	Daily Average Number of Calls Received and Sent	Cross-tab (chi-square)	Substantiated (λ^2 = 36.323, sig.= 0.014)(*)
2.4.2.		Daily Average Number of Text Messages Received and Sent		Not substantiated
2.4.3.		Total Daily Call Duration		Substantiated (λ^2 = 29.679, sig.= 0.013)(*)
2.4.4.		Monthly Paid Mobile Invoice Amount		Substantiated (λ^2 = 68.292, sig.= 0.000)(*)
2.4.5.		Time of Cell Phone Use - Morning		Not substantiated
2.4.6.		Time of Cell Phone Use - Noon		Substantiated (λ^2 = 36.584, sig.= 0.013)(*)
2.4.7.		Time of Cell Phone Use - Evening		Substantiated (λ^2 = 34.653, sig.= 0.022)(*)
2.4.8.		Time of Cell Phone Use - Night		Not substantiated

Furthermore, hypotheses results for mobile operator Vodafone has been also given in Table 32 below. According to Table 32, only hypothesis 2.4.5 is satisfied. From the result of cross-tab table for hypothesis 2.4.5, most of the young Vodafone customers (170 respondents in 215 Vodafone customers) use their mobile phone very rarely in mornings at each customer satisfaction level.

Table 32. Testing Results of Hypothesis 2.4 and Its Sub-hypotheses for Operator Vodafone

Hypothesis#	Independent Variable	Dependent Variable	Type of Test	Result
2.4.1.	Mobile Operator Satisfaction - Vodafone	Daily Average Number of Calls Received and Sent	Cross-tab (chi-square)	Not substantiated
2.4.2.		Daily Average Number of Text Messages Received and Sent		Not substantiated
2.4.3.		Total Daily Call Duration		Not substantiated
2.4.4.		Monthly Paid Mobile Invoice Amount		Not substantiated
2.4.5.		Time of Cell Phone Use - Morning		Substantiated ($\lambda^2 = 31.654$, sig.= 0.047)(*)
2.4.6.		Time of Cell Phone Use - Noon		Not substantiated
2.4.7.		Time of Cell Phone Use - Evening		Not substantiated
2.4.8.		Time of Cell Phone Use - Night		Not substantiated

Another and last mobile operator Avea results also can be seen in Table 33. Only hypothesis 2.4.4 is supported for Avea. 230 respondents in 300 Avea customers are paying for mobile monthly in 0-50 TL interval at each user satisfaction level.

Table 33. Testing Results of Hypothesis 2.4 and Its Sub-hypotheses for Operator Avea

Hypothesis#	Independent Variable	Dependent Variable	Type of Test	Result
2.4.1.	Mobile Operator Satisfaction - Avea	Daily Average Number of Calls Received and Sent	Cross-tab (chi-square)	Not substantiated
2.4.2.		Daily Average Number of Text Messages Received and Sent		Not substantiated
2.4.3.		Total Daily Call Duration		Not substantiated
2.4.4.		Monthly Paid Mobile Invoice Amount		Substantiated ($\lambda^2 = 29.550$, sig.= 0.014)(*)
2.4.5.		Time of Cell Phone Use - Morning		Not substantiated
2.4.6.		Time of Cell Phone Use - Noon		Not substantiated
2.4.7.		Time of Cell Phone Use - Evening		Not substantiated
2.4.8.		Time of Cell Phone Use - Night		Not substantiated

Chi-Square Tests for Mobile Phone Functionality Groups

Collected data about used mobile phone functionalities have been explained before in 'Frequency Analyses of Used Mobile Phone Functionalities' chapter above. Hypothesis 3 is suggested about used mobile phone functionality groups of users. Hypothesis 3 states that "User behavior/Mobile phone usage intensity varies depending on user's mobile phone functionality group membership". Hypothesis 3 testing results have been explained in this section.

Firstly, frequency runs have been applied as stated before in Table 9. Then, user group creating has been tried by using 'number of used mobile phone functionalities' and 'cumulative percent columns' in Table 34 below. By dividing the

equal intervals to all cumulative percent value (100%), 3 groups (36%, 63% and 100%) and 4 groups (22.3%, 42.7%, 63.7% and 100%) have been tried and then chi-square analyses have been applied for each group.

Table 34. Grouping Table According to Cumulative Percent of Used Mobile Phone Functionalities

Number of Used Mobile Functionalities	Frequency	Cumulative Percent	Group Number in 3 Groups Testing	Group Number in 4 Groups Testing
1	1	0,2	1	1
2	2	0,7	1	1
3	6	2,1	1	1
4	15	5,6	1	1
5	7	7,2	1	1
6	11	9,7	1	1
7	18	13,9	1	1
8	15	17,4	1	1
9	21	22,3	1	1 (22.3%)
10	25	28,1	1	2
11	34	36	1 (36%)	2
12	29	42,7	2	2 (42.7%)
13	43	52,7	2	3
14	47	63,6	2 (63.6%)	3 (63.6%)
15	68	79,4	3	4
16	89	100	3 (100%)	4 (100%)
Total	431			

In the user grouping stage, 3 groups have been tried firstly and sub-hypotheses have been applied to user groups. Table 35 gives the results of each sub-hypothesis for 3 user groups. According to Table 35, only hypothesis 3.4 and 3.5 are supported and significance value for each sub-hypothesis is also given below.

Table 35. Testing Results of Hypothesis 3 and Its Sub-hypotheses for Three User Groups

Hypothesis #	Independent Variable	Dependent Variable	Type of Test	Result
3.1.	Used Mobile Phone Functionality Group (3 Groups)	Daily Average Number of Calls Received and Sent	Cross-tab (chi-square)	Not substantiated (λ^2= 9.094, sig.= 0.334)
3.2.		Daily Average Number of Text Messages Received and Sent		Not substantiated (λ^2= 7.960, sig.= 0.633)
3.3.		Total Daily Call Duration		Not substantiated (λ^2= 1.369, sig.= 0.968)
3.4.		Monthly Paid Mobile Invoice Amount		Substantiated (λ^2= 36.542, sig.= 0.000)(*)
3.5.		Time of Cell Phone Use - Morning		Substantiated (λ^2= 26.112, sig.= 0.001)(*)
3.6.		Time of Cell Phone Use - Noon		Not substantiated (λ^2= 7.381, sig.= 0.496)
3.7.		Time of Cell Phone Use - Evening		Not substantiated (λ^2= 12.594, sig.= 0.127)
3.8.		Time of Cell Phone Use - Night		Not substantiated (λ^2= 3.828, sig.= 0.872)

After testing the hypothesis 3 with three user groups as it can be seen in Table 35, same tests have been applied by creating four user groups. Table 36 gives the results of hypothesis 3 and its sub-hypotheses results for four user groups. Table 36 portrays that hypothesis 3.4 and 3.5 are supported as same as three user groups testing results.

Table 36 also gives the significance levels of each sub-hypothesis below.

Significance values are lower than 0.05 for hypothesis 3.4 and 3.5.

Table 36. Testing Results of Hypothesis 3 and Its Sub-hypotheses for Four User Groups

Hypothesis#	Independent Variable	Dependent Variable	Type of Test	Result
3.1.	Used Mobile Phone Functionality Group (4 Groups)	Daily Average Number of Calls Received and Sent	Cross-tab (chi-square)	Not substantiated (λ^2= 11.721, sig.= 0.468)
3.2.		Daily Average Number of Text Messages Received and Sent		Not substantiated (λ^2= 15.359, sig.= 0.426)
3.3.		Total Daily Call Duration		Not substantiated (λ^2= 7.264, sig.= 0.610)
3.4.		Monthly Paid Mobile Invoice Amount		Substantiated (λ^2= 36.768, sig.= 0.000)(*)
3.5.		Time of Cell Phone Use - Morning		Substantiated (λ^2= 27.727, sig.= 0.006)(*)
3.6.		Time of Cell Phone Use - Noon		Not substantiated (λ^2= 11.247, sig.= 0.508)
3.7.		Time of Cell Phone Use - Evening		Not substantiated (λ^2= 20.096, sig.= 0.065)
3.8.		Time of Cell Phone Use - Night		Not substantiated (λ^2= 10.507, sig.= 0.572)

First of the supported hypothesis: Hypothesis 3.4 states that “There is a relationship between ‘mobile phone functionality group membership’ and ‘monthly paid mobile invoice amount’”. Table 37 gives the cross-tab result of the given hypothesis below.

Table 37. Cross-tab Between ‘Mobile Phone Functionality Group Membership’ and ‘Monthly Paid Mobile Invoice Amount’

Group number for 3 user groups		Monthly Paid Mobile Invoice Amount				Total
		0-20 TL	21-50 TL	50-100TL	More than 100TL	
1	Count	57	78	15	5	155
	%	55,30%	37,10%	18,30%	13,90%	36,00%
2	Count	21	59	26	13	119
	%	20,40%	28,10%	31,70%	36,10%	27,60%
3	Count	25	73	41	18	157
	%	24,30%	34,80%	50,00%	50,00%	36,40%
	Count	103	210	82	36	431
	%	100,00%	100,00%	100,00%	100,00%	100,00%

According to Table 37, from 1.group (lower functional user group) to 3.group (strong functional user group) monthly paid mobile amount are ascending. Percentages in the 50-100 TL and 100-over TL intervals are ascending as parallel to the used number of mobile phone functionalities. It can be resulted that more addicted young customers pay much more for mobile.

Second and last supported hypothesis: Hypothesis 3.5 suggests that “There is a relationship between ‘mobile phone functionality group membership’ and ‘typical time of cell phone use in morning’”. Table 38 gives the cross-tab results of given hypothesis. As it can be seen in Table 38, from 1.group (lower functional user group) to 3.group (strong functional user group), frequency of use in morning are ascending. Percentages in normal and upper intervals are ascending as parallel to the used

number of mobile phone functionalities. It can be summarized that functionality addicted young customers use their mobile phone in mornings much more than the others.

Table 38. Cross-tab Between 'Mobile Phone Functionality Group Membership' and 'Time of Cell Phone Use in Morning'

Group number for 3 user groups		Time Of Cell Phone Use - Morning					Total
		Rarely	Sometimes	Normal	Frequently	Very frequently	
1	Count	96	37	17	5	0	155
	%	45,50%	28,50%	26,60%	21,70%	0,00%	36,00%
2	Count	58	34	18	9	0	119
	%	27,50%	26,20%	28,10%	39,10%	0,00%	27,60%
3	Count	57	59	29	9	3	157
	%	27,00%	45,40%	45,30%	39,10%	100,00%	36,40%
	Count	211	130	64	23	3	431
	%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%

Cluster Analysis for Social & Psychological Purpose of Use

Social purposes and physiological attitudes of young users have been measured in 12.question in the survey by 14 items where 5 point interval scale has been used for the items. Hypothesis 4 has been structured on these items. Hypothesis 4 states that: "User behavior/Mobile phone usage intensity varies depending on user's 'social & psychological purpose of use' cluster membership". Before starting the cluster analysis, reliability test has been applied for the question as it can be seen in Table 6 above in 'Internal Consistency of Scales' section.

K-means clustering has been used to generate the clusters. The k-means clustering algorithm assigns cases to clusters based on the smallest amount of

distance between the cluster mean and case. This is an iterative process that stops once the cluster means do not change much in successive steps. Maximum iteration number has been set to 20 before starting the analysis. Iteration history of cluster analysis is given in Table 39 below. Final cluster membership has been achieved with 17 iterations.

Table 39. Iteration History of 'Social and Psychological Purpose of Use' Cluster Analysis

Iteration History				
Iteration		Change in Cluster Centers		
		1	2	3
	1	5,03	4,973	5,067
	2	0,216	1,247	0,249
	3	0,046	0,565	0,265
	4	0,015	0,204	0,093
	5	0,055	0,067	0,085
	6	0,087	0,136	0,077
	7	0,028	0,071	0,051
	8	0	0,071	0,027
	9	0,014	0,082	0,04
	10	0,027	0,07	0,049
	11	0,018	0,059	0,032
	12	0,028	0,069	0,052
	13	0,016	0,154	0,076
	14	0,052	0,064	0,076
	15	0,017	0,045	0,032
	16	0	0,06	0,027
	17	0	0	0

a. Convergence achieved due to no or small change in cluster centers. The maximum absolute coordinate change for any center is ,000. The current iteration is 17. The minimum distance between initial centers is 11,358.

Furthermore, final cluster centers of analysis are also given in Table 40 below. There are 5 intervals for each variable in the table. These intervals are:

- Strongly Disagree = 1
- Partially Disagree = 2
- Undecided = 3
- Partially Agree = 4
- Strongly Agree = 5

Table 40. Final Cluster Centers of 'Social & Psychological Purpose of Use' Cluster Analysis

Final Cluster Centers			
	Cluster		
	1	2	3
Psychological Attitude - Personal Image Care	3	2	2
Psychological Attitude - Mobile Phone Dependency	5	2	4
Psychological Attitude - Text Messaging Like Gift Exchange	4	2	3
Psychological Attitude - Feel More Secure In Case of Emergency	5	4	5
Psychological Attitude - Feel More Informed	5	3	5
Psychological Attitude – Feel Accompanied	4	2	4
Psychological Attitude – Protected From Theft	3	2	1
Social Purposes - Social Interaction	4	3	4
Social Purposes - Parental Contacts	5	4	4
Social Purposes - Personal Safety	4	2	2
Social Purposes - Financial Incentive	3	2	2
Social Purposes – Information Access	4	2	3
Social Purposes - Time Management and Coordination	4	2	3
Social Purposes - Privacy Management	4	2	2

According to these 5 levels of agreement for each variable, 3 given clusters have been generated. User profiles by using the final cluster centers can be summarized as:

- Cluster 1 seems like highly mobile phone dependent users
  (Frequency: 184/431, Percent: 43%)
- Cluster 2 seems like relax users except emergency and parental contacts cases
  (Frequency: 68/431, Percent: 16%)
- Cluster 3 seems like partially dependent users
  (Frequency: 179/431, Percent: 41%)

Dependency levels of users in the clusters are in given order: 1 > 3 > 2. After cluster analysis has been finalized, chi-square tests have been applied for each sub-hypothesis under hypothesis 4 group.

Chi-Square Tests for Social and Social & Psychological Purpose Cluster Membership

Clusters have been generated using cluster analysis as mentioned in previous section. Hypothesis 4 has been structured on these clusters. Hypothesis 4 suggests that: "User behavior/Mobile phone usage intensity varies depending on user's 'social & psychological purpose of use' cluster membership". Chi-square tests have been applied for hypothesis 4 and its 8 sub-hypotheses. Results of hypotheses are given in Table 41 below. According to Table 41, hypothesis 4.5, 4.6 and 4.7 are supported. Significance values for related hypotheses are also given in Table 41.

Table 41. Testing Results of Hypothesis 4 and Its Sub-hypotheses

Hypothesis#	Independent Variable	Dependent Variable	Type of Test	Result
4.1.	'Social & Psychological Purpose of Use' Cluster Membership	Daily Average Number of Calls Received and Sent	Cross-tab (chi-square)	Not substantiated (λ^2= 10.567, sig.= 0.227)
4.2.		Daily Average Number of Text Messages Received and Sent		Not substantiated (λ^2= 9.182, sig.= 0.515)
4.3.		Total Daily Call Duration		Not substantiated (λ^2= 7.158, sig.= 0.306)
4.4.		Monthly Paid Mobile Invoice Amount		Not substantiated (λ^2= 12.422, sig.= 0.053)
4.5.		Time of Cell Phone Use - Morning		Substantiated (λ^2= 26.951, sig.= 0.001)(*)
4.6.		Time of Cell Phone Use - Noon		Substantiated (λ^2= 34.845, sig.= 0.000)(*)
4.7.		Time of Cell Phone Use - Evening		Substantiated (λ^2= 32.968, sig.= 0.000)(*)
4.8.		Time of Cell Phone Use - Night		Not substantiated (λ^2= 12.430, sig.= 0.133)

First accepted sub-hypotheses 4.5 states that: "There is a relationship between 'cluster membership' and 'typical time of cell phone use in the morning'". Table 42 provides the cross-tab table result of hypothesis. As it can be seen in the table, most of the respondents for each cluster are placed in 1.interval (rarely). Mobile phone dependency level (1 > 3 > 2) and percentages of clusters in the interval of rarely

usage in mornings (2 >3>1) are opposite. This means that, cluster membership (mobile phone dependency level) and cell phone usage in mornings are changing in parallel. Most of the relax users (66%) in cluster 2 use their mobile phone rarely in mornings.

Table 42. Cross-tab Between 'Social & Psychological Purpose of Use' Cluster Membership and Time of Cell Phone Use in Morning

Time of Cell Phone Use - Morning		Cluster Number of Case			Total
		1	2	3	
1	Count	76	49	86	211
	%	39,80%	66,20%	51,80%	49,00%
2	Count	65	13	52	130
	%	34,00%	17,60%	31,30%	30,20%
3	Count	39	8	17	64
	%	20,40%	10,80%	10,20%	14,80%
4	Count	11	2	10	23
	%	5,80%	2,70%	6,00%	5,30%
5	Count	0	2	1	3
	%	0,00%	2,70%	0,60%	0,70%
Total	Count	191	74	166	431
	%	100,00%	100,00%	100,00%	100,00%

Second accepted sub-hypotheses 4.6 also states that: "There is a relationship between 'cluster membership' and 'typical time of cell phone use in the noon'". Table 43 displays the cross-tab table result of hypothesis. As it can be seen in the table, mobile phone dependency level of clusters (1 > 3 > 2) and percentages of clusters in the frequently and very frequently intervals (35% > 21.70% > 12.2%) are parallel. This means that frequently usage percentages of mobile phone usage in noon are ascending as parallel to the mobile phone dependency.

Table 43. Cross-tab Between ‘Social & Psychological Purpose of Use’ Cluster Membership and Time of Cell Phone Use in Noon

Time of Cell Phone Use - Noon		Cluster Number of Case			Total
		1	2	3	
1=Rarely	Count	6	6	11	23
	%	3,10%	8,10%	6,60%	5,30%
2=Sometimes	Count	35	35	45	115
	%	18,30%	47,30%	27,10%	26,70%
3=Normal	Count	83	24	74	181
	%	43,50%	32,40%	44,60%	42,00%
4= Frequently	Count	57	8	31	96
	%	29,80%	10,80%	18,70%	22,30%
5=Very Frequently	Count	10	1	5	16
	%	5,20%	1,40%	3,00%	3,70%
Total	Count	191	74	166	431
	%	100,00%	100,00%	100,00%	100,00%

Last substantiated sub-hypothesis 4.7 suggests that: “There is a relationship between ‘cluster membership’ and ‘typical time of cell phone use in evening’”. Table 44 below gives the cross-tab table result of hypotheses. Table displays that user behavior in evenings is similar to the user behavior in noon. As a result of that, mobile phone dependency level of clusters (1 > 3 > 2) and total percentages of clusters in the frequently and very frequently intervals (66.5% > 57.20% > 37.9%) are parallel. This means that frequently usage percentages of mobile phone usage in evening are ascending as parallel to the mobile phone dependency.

Table 44. Cross-tab Between 'Social & Psychological Purpose of Use' Cluster Membership and Time of Cell Phone Use in Evening

Time of Cell Phone Use - Evening		Cluster Number of Case			Total
		1	2	3	
1=Rarely	Count	0	3	1	4
	%	0,00%	4,10%	0,60%	0,90%
2=Sometimes	Count	12	5	11	28
	%	6,30%	6,80%	6,60%	6,50%
3=Normal	Count	52	38	59	149
	%	27,20%	51,40%	35,50%	34,60%
4= Frequently	Count	86	25	75	186
	%	45,00%	33,80%	45,20%	43,20%
5=Very Frequently	Count	41	3	20	64
	%	21,50%	4,10%	12,00%	14,80%
Total	Count	191	74	166	431
	%	100,00%	100,00%	100,00%	100,00%

CHAPTER 6

CONCLUSION AND IMPLICATIONS

In recent years, researchers started to turn attention to social aspects of cell phone diffusion and the impacts cell phones had on young individuals' daily lives and relationships. Thesis intends to add the Turkey perspective to the worldwide body of the literature about the impacts of mobile phones on young users' attitudes and behaviors.

In order to generate a research framework, literature research has been made and factors that affect a young user's behavior have been categorized under given four groups: demographic characteristics, cell phone usage characteristics, used mobile phone functionalities and social and psychological purposes of use. After the finalization of the research model, a questionnaire has been prepared and targeted questions have been asked to collect the correct answers for testing the suggested hypotheses. Then, both panel of experts and pilot studies have been consulted to ensure that the questionnaire is appropriate. Convenience sampling (non-probability sampling design) has been used to gather information quickly and efficiently. The respondents of the survey were 18-30 years young individuals in Turkey who use the Internet. At the end of data gathering process, descriptive statistics, reliability tests, cross-tab(chi-square) and cluster analyses are performed by using SPSS v.18 with data set of 431 respondents successfully completed all questions of the survey.

Based on the research findings of analyses in previous sections, the conclusions are given below. Firstly, demographic characteristics based results can be summarized as follows:

- User behavior is not changing according to gender differentiation for target sample.
- While full time working young users are sending only 1-10 SMS in a day, not-working young users are sending more than 10 SMS. In addition, not-working users pay 0-50 TL monthly for mobile but full time working users pay more than 50 TL in fact more than 100 TL monthly. Moreover, while not-working young users are using mobile phone rarely or sometimes in mornings, full time working users are using mobile phones frequently in mornings.
- Personal education level and daily average number of text messages have an opposite relationship. While personal education level is ascending, daily average number of text messages is decreasing. 35% of undergraduate users, 62% of graduate users and 79% of doctoral degree users are sending 1-10 SMS daily in an ascending manner of percentages.
- Daily total call duration of 84% of young respondents is in 0-60 minute's interval.
- Monthly paid mobile amount are increasing as parallel to mother's and father's education level of young respondents.

Secondly, results which have been extracted from cell phone usage characteristics based hypotheses can also be summarized as follows:

- Young users, who have a present mobile phone, pay less for mobile usage. On the other hand, young users who buy own mobile phone, pays much more monthly for mobile usage.
- While most of the young respondents who do not have a smart phone pay 0-20 TL monthly, smart phone owners pay more than 20 TL monthly. This means that, smart phone owners pay much more for their monthly mobile phone usage.
- As parallel to the mobile phone ownership duration, monthly paid mobile invoice amount is ascending and percentage in the 0-50 TL interval moves to the 50 TL and over 100 TL intervals.
- Independently from customer satisfaction level, most of the young Turkcell customers (259 respondents in 343 Turkcell customers) are making average 1-10 calls daily and most of the young Turkcell customers (282 respondents in 343 Turkcell customers) are having 0-60 minutes call duration daily. Moreover, independently from customer satisfaction level, most of the young Turkcell customers (248 respondents in 343 Turkcell customers) pay for mobile 20-100 TL monthly and highly satisfied young Turkcell customers are using their mobile phone much more in noon. Lastly, most of the young Turkcell customers in each satisfaction level use their mobile phone very frequently in evenings.
- Most of the young Vodafone customers (170 respondents in 215 Vodafone customers) use their mobile phone very rarely in mornings at each customer satisfaction level.
- Independently from user satisfaction level, 230 respondents among total 300 Avea customers are paying for mobile monthly in 0-50 TL interval.

Thirdly, young mobile phone users can be grouped according to number of used mobile phone functionalities. These groups are: lower, medium and strong functional user groups. Results about these three groups' behavior can be summarized also as:

- More addicted young customers (from lower to strong functional group) pay much more monthly for mobile.
- Functionality addicted young customers use their mobile phone in mornings much more than the other groups.

Lastly, young users can be clustered depending on their social and psychological purpose of use. These clusters can be named like that: highly mobile phone dependent users, relax users except emergency and parental contacts cases and partially dependent users. Results about these clusters' behavior have been stated below:

- Cluster membership (mobile phone dependency level) and cell phone usage in mornings are changing in parallel. Most of the relax users (66%) in cluster 2 use their mobile phone rarely in mornings.
- Usage percentages of 'frequently mobile phone usage in the noon' are ascending as parallel to the mobile phone dependency.
- Usage percentages of 'frequently mobile phone usage in the evenings' are ascending as parallel to the mobile phone dependency.

Implications

Results of this study can be used for decision-making and user profiling researches of the mobile operators, consultancy firms, marketing researchers and also social science researchers. Designers and marketers of cell phones should pay attention to social, psychological and behavioral aspects of cell phone usage. Findings of the study have implications especially for regional cell phone marketing strategies like market segmentation and target marketing purposes.

Limitations and Recommendations for Further Research

This research like any other research has its limitations. First of all, convenience sampling is used in this thesis to collect information from respondents. This method was convenient for the respondents, who are using internet and easily available to fill in the survey. Those people did not have any probabilities in order to be chosen as sample subjects. If the representativeness of the sample is critical for the studies in the future, a probability sampling design should be used to make the data collected is more reliable. By this way, the findings from the thesis can be confidently generalized to the population as a whole.

Furthermore, this thesis examines young Turkish individuals' attitudes and behaviors towards mobile phone usage. The cities of residence of the respondents are not known and majority of the sample is from Istanbul. As a result of this, generalizability of the scope is limited. A more widespread study can be applied to other regions of Turkey.

The other limitation issue is that mobile communication technology is advancing with rapid pace. The advancement of technology is, however, bringing changes in behaviors with it regarding the use of the communication technologies. As a result of this, there may be a necessity to check the validity of the research hypotheses in the future.

Last limitation issue is that data is collected by using internet channels like social media, e-mail etc. So, it is impossible to determine number of arrived respondents and rate of the response to the survey.

This study spotlights on all of the personal characteristics, social and psychological attitudes and used mobile phone functionalities of the young mobile phone users in Turkey. Few studies are available considering all of the dimensions that are covered in the present study. This study is still limited to only 431 users, in order to get in depth view point and preferences of customers it can be broadened by selecting higher sample size. So suggesting the future implementation of the study it should be repeated with larger sample. Furthermore, new studies for each dimension of the study as generating new and deeper research models may be also implemented in the future works.

Another suggestion about the future work, income level of respondents and parents of them can be analyze as two dimensions to see how user behavior changes depending on income level. Furthermore, it is also suggested to analyze how network (friends) of the respondents affects their mobile attitudes and behavior in future works.

There are also improvement points about the research model and scale types of the questionnaire. It is possible to change the scale types of the attributes in the

behavioral scale to continuous scales and to make more arithmetic operations and strong tests in the future works. In addition to this, most of the respondents in the sample have been collected in 0-60 minutes total monthly call duration interval. So, it is suggested that it would be better if total call duration intervals were smaller like 0-30 minutes, 30-60 minutes etc. for better analysis. Lastly, monthly paid invoice amount variable seems like determining in the hypothesis results, it may be suggested that scale of this variable can be changed to a continuous scale type and make much more strong analyses for the future.

APPENDIX A

QUESTIONNAIRE (ENGLISH)

COVER

Description

This survey is prepared for the master‘s thesis by Nurdan Ökten who is a graduate student at the Management Information Systems Department under the advisory of Prof. Dr. Meltem Özturan. The subject of the survey is evaluation of the factors that affect the attitudes and behaviors of young mobile phone users in Turkey. Target respondents of the questionnaire are 18-30 years young individuals in Turkey. The findings will be only used for academic purposes.

Thank you for your support.
Nurdan ÖKTEN

For your questions and feedbacks:
nurdanokten@gmail.com
ozturanm@boun.edu.tr

For all questions, please put an [x] next to the answer that best suits you.

PART I. DEMOGRAPHIC CHARACTERISTICS

1. Your age: ___

2. Your gender:

Female	
Male	

3. Your education level:

Primary school graduate	
High school graduate	
Undergraduate student/degree	
Graduate student/degree	
Doctoral student/degree	

4. Your mother's education level:

Primary school graduate	
High school graduate	
Undergraduate degree	
Graduate degree	
Doctoral degree	

5. Your father's education level:

Primary school graduate	
High school graduate	
Undergraduate degree	
Graduate degree	
Doctoral degree	

6. Your employment status:

Not employed	
Part time employee	
Full time employee	

PART II.MOBILE PHONE USAGE CHARACTERISTICS

7. Have you bought your mobile phone by yourself?

Yes	
No	

8. Are you a smart phone user?

Yes	
No	

9. How long have you been using a mobile phone?

1-3 years	
3-6 years	
6-9 years	
9 years and over	

10. Considering your mobile phone usage intensity at given places, please choose the appropriate answer.

	Rarely	Sometimes	Normal	Frequently	Very frequently
At school					
At home					
At work					
At car					
At other places					

11. Considering your mobile operator satisfaction, please choose the appropriate answer.

	Not satisfied	Less satisfied	Normal	Satisfied	Very satisfied	Not using
Turkcell						
Vodafone						
Avea						

PART III. SOCIAL PURPOSES AND PHYSIOLOGICAL ATTITUDES

12. Considering your attitudes, please choose the appropriate answer for given statements.

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
My mobile phone is a part of my image and reflects me.					
I feel missing myself without my mobile phone.					
I feel like exchanging a gift when text messaging.					
I feel more secure in case of an emergency.					
I feel more informed with my mobile phone.					
My mobile phone is my partner in every place.					
I feel more secure and protected from theft with my mobile phone.					

I use my mobile phone as an interaction tool with my environment.					
I use my mobile phone as a communication tool with my parents.					
I use my mobile phone for personal safety purposes.					
I use mobile phone because it is cheaper than other solutions.					
I use mobile phone because it provides connection to information.					
I use my mobile phone for time management and coordination purposes.					
I use my mobile phone for personal privacy management purposes.					

PART IV. USED MOBILE PHONE FUNCTIONALITIES.

13. Considering your mobile functionalities that you use, please choose the appropriate answer for each functionality.

	Yes	No
Call send/receive		
SMS/MMS		
3G/4G support		
Camera		
MP3 player		
Video recording and watching		
Blue Tooth		
Wireless		
Social media applications		
Email applications		
Game support		
Calendar		
Reminder and alarm		
Application store		
Google maps		
Document reader applications (PDF, WORD)		

PART V. MOBILE PHONE USAGE INTENSITY

14. For PERSONAL issues, how many calls do you receive and send in a DAY?

1-5 calls	
6-10 calls	
11-20 calls	
21-30 calls	
More than 30 calls	

15. For PERSONAL issues, how many text messages do you receive and send in a DAY?

1-10 SMS	
11-20 SMS	
21-50 SMS	
51-100 SMS	
101-200 SMS	
More than 200 SMS	

16. For PERSONAL issues, how many minutes do you make mobile phone calls in a DAY?

0-60 minutes	
60-120 minutes	
120-180 minutes	
More than 180 minutes	

17. How much do you pay for your MONTHLY mobile phone usage?

0-20 TL	
21-50 TL	
50-100TL	
More than 100 TL	

18. Considering your mobile phone usage intensity in time of a day, please choose appropriate option for each time period.

	Rarely	Sometimes	Normal	Frequently	Very Frequently
Morning					
Noon					
Evening					
Night					

APPENDIX B

QUESTIONNAIRE (TURKISH)

KAPAK
Açıklama
Değerli katılımcı,
Bu anket, Türkiye'deki gençlerin GSM kullanımı konusundaki fikir ve davranışlarını etkileyen faktörleri değerlendirmek amacıyla, Boğaziçi Üniversitesi Yönetim Bilişim Sistemleri Bölümü öğretim üyesi Prof. Dr. Meltem Özturan tarafından yönetilen tez çalışması için hazırlanmıştır. Anketin hedef kitlesi, 18-30 yaş aralığındaki gençlerdir. Anketten elde edilecek bilgiler akademik amaçlı olarak kullanılacaktır.
Değerli katkılarınızdan dolayı teşekkür ederiz.
Nurdan Ökten

Soru ve görüşleriniz için:
nurdanokten@gmail.com
ozturanm@boun.edu.tr

Tüm sorular için; lütfen seçiminizi uygun kutuya [X] koyarak belirtiniz.

BÖLÜM I. DEMOGRAFİK ÖZELLİKLER

1. Yaşınız : ___

2. Cinsiyetiniz :

Bayan	
Erkek	

3. Eğitim durumunuz :

İlköğretim mezunu	
Lise mezunu	
Üniversite öğrencisi/mezunu	
Yüksek Lisans öğrencisi/mezunu	
Doktora öğrencisi/mezunu	

4. Annenizin eğitim durumu :

İlköğretim mezunu	
Lise mezunu	
Üniversite mezunu	
Yüksek Lisans mezunu	
Doktora mezunu	

5. Babanızın eğitim durumu :

İlköğretim mezunu	
Lise mezunu	
Üniversite mezunu	
Yüksek Lisans mezunu	
Doktora mezunu	

6. Çalışma durumunuz :

Çalışmıyorum.	
Yarı zamanlı	
Tam zamanlı	

BÖLÜM II.CEP TELEFONU KULLANIM ÖZELLİKLERİ

7. Cep telefonunuzu kendiniz mi satın aldınız?

Evet	
Hayır	

8. Akıllı telefon kullanıcısı mısınız?

Evet	
Hayır	

9. Ne kadar süredir cep telefonu kullanıyorsunuz?

1-3 yıl	
3-6 yıl	
6-9 yıl	
9 yıl ve üzeri	

10. Aşağıda belirtilen sosyal alanlardaki telefon kullanım yoğunluğunuzu derecelendiriniz.

	En az yoğun	Az yoğun	Normal	Yoğun	Çok yoğun
Okul ortamı					
Ev ortamı					
İş ortamı					
Araç kullanım sırasında					
Diğer alanlar (Avm, café vs..)					

11. Kullandığınız mobil operatörleri memnuniyet derecesine göre değerlendiriniz.

	En düşük	Düşük	Normal	Yüksek	En yüksek	Kullanmıyorum
Turkcell						
Vodafone						
Avea						

BÖLÜM III. SOSYAL VE PSİKOLOJİK KULLANIM AMAÇLARI

12. Aşağıdaki ifadelere ne derece katıldığınızı ölçek üzerinde gösteriniz.

	Kesinlikle Katılmıyorum	Kısmen Katılmıyorum	Ne Katılıyorum Ne Katılmıyorum	Kısmen Katılıyorum	Kesinlikle Katılıyorum
Cep telefonum kişisel imajımın bir parçasıdır ve beni yansıtır.					
Cep telefonumu yanıma almadığımda kendimi eksik hissederim.					
Arkadaşlarımla mesajlaşarak sohbet etmek, beni mutlu eder.					
Acil durumlarda yanımda cep telefonum olduğunda kendimi güvende hissederim.					
Cep telefonum yanımda olduğunda kendimi bilgilendirilebilir/erişilebilir hissederim.					
Cep telefonum bana her ortamda eşlik eder.					
Cep telefonum yanımdayken hırsızlara karşı kendimi korunmuş hissederim.					

Cep telefonumu çevremle etkileşim aracı olarak kullanırım.					
Cep telefonumu ebeveynlerimle iletişim için kullanırım.					
Cep telefonumu kişisel güvenliğimi sağlamak için kullanırım.					
Cep telefonunu, diğer iletişim çözümlerine gore daha ekonomik olduğu için kullanırım.					
Cep telefonumu, bilgiye erişim sağladığı için kullanırım.					
Cep telefonumu, zaman yönetimi ve koordinasyon amaçlarıyla kullanırım.					
Cep telefonumu, kişisel yaşam gizliliğimi yönetmek ve sağlamak amacıyla kullanırım.					

BÖLÜM IV. KULLANILAN TELEFON FONKSİYONLARI

13. Telefonunuzda aşağıdaki özelliklerden hangilerini kullanırsınız? (Lütfen kullandığınız tüm özellikleri işaretleyiniz.)

	Evet	Hayır
Çağrı gönderme/alma		
SMS/MMS özelliği		
3G/4G desteği		
Kamera		
MP3 player		
Video kayıt ve izleme		
Blue Tooth		
Wireless		

Sosyal Medya uygulamaları (facebook, twitter)		
Email uygulamaları		
Oyun desteği		
Takvim		
Hatırlatma ve alarm özelliği		
Uygulama mağazası(Apple Store gibi)		
Google maps		
Döküman okuyucu uygulamalar (PDF, WORD)		

BÖLÜM V. MOBİL TELEFON KULLANIM YOĞUNLUĞU (KULLANICI DAVRANIŞI)

14. Kişisel amaçlarla GÜNDE ortalama kaç kez arıyor veya aranıyorsunuz?

1-5 çağrı	
6-10 çağrı	
11-20 çağrı	
21-30 çağrı	
30'dan fazla sayıda çağrı	

15. Kişisel amaçlarla GÜNDE ortalama kaç sms alıyor veya gönderiyorsunuz?

1-10 sms	
11-20 sms	
21-50 sms	
51-100 sms	
101-200 sms	
Günde 200'den fazla sms	

16. Kişisel amaçlarla GÜNDE ortalama kaç dakika sesli telefon görüşmesi yaparsınız?

0-60 dakika	
60-120 dakika	
120-180 dakika	
180 dakikadan fazla	

17. AYLIK mobil kullanım masrafınız ortalama ne kadardır?

0-20 TL	
21-50 TL	
50-100TL	
100 TL üzeri	

18. Gün içerisinde verilen zaman aralıklarını, telefon kullanım yoğunluğunuza göre ölçek üzerinde gösteriniz.

	En az yoğun	Az yoğun	Normal	Yoğun	Çok yoğun
Sabah saatleri					
Öğlen saatleri					
Akşam saatleri					
Gece					

REFERENCES

Aaron Smith (2011, Sep). *Americans and text messaging*. Retrieved Jan, 2013, from Pew Research Center website: http://pewinternet.org/Reports/2011/Cell-Phone-Texting-2011.aspx

Aoki, K., Downes, E.J.: An analysis of young people's use of and attitudes toward cell phones.*Telematics and Informatics* 20, 4 (2003), 349-364.

Curry, S.R., 2001. Wireless trend taking hold. Advertising Age 72 (26), S2.

Economides, A.A. and Grousopoulou, A. (2009), ''Students' thoughts about theimportance and costs of their mobile devices' features and services'', *Telematics and Informatics*, Vol. 26 No. 1, pp. 57-84.

Frost & Sullivan, 2006, Social Impact of Mobile Telephony in Latin America http://www.gsma.com/latinamerica/

Geser Hans: Are girls (even) more addicted? Some gender patterns of cell phone usage. In: Sociology in Switzerland: Sociology of the Mobile phone. Online Publications. Zuerich, June 2006, http://socio.ch/mobile/t_geser3.pdf

Greenberg, B.S., Sherry, J.L., Lachlan, K., Lucas, K. and Holmstrom, A. (2010), ''Orientations on video games among gender and age groups'', Simulation and Gaming, Vol. 41 No. 2, pp. 238-59.

Grimm, M., 2001. Cutting the cord: Do cell phone makers have generation Y's number? American Demographics (January), 66–67.

Ishfaq Ahmed, Tehmina Fiaz Qazi, Mobile Phone Adoption & Consumption Patterns of University Students in Pakistan, *International Journal of Business and Social Science*, May 2011, Vol. 2 No. 9

Jeff W. Totten, Thomas J. Lipscomb, Roy A. Cook & William Lesch (2005): General Patterns of Cell Phone Usage Among College Students, *Services Marketing Quarterly*, 26:3, 13-39

Jones, Chris and Cross, Simon (2009). Is there a net generation coming to university? In: ALT-C 2009 "In Dreams Begins Responsibility": Choice, Evidence and Change, 8-10 September 2009, Manchester, UK.

Lange, Ulrich. (1993): Telefonkommunikation im Privaten Alltag und die Grenzender Interpretation in: Meyer, Sibylle & Schulze, Eva eds. *Technisiertes Familienleben Blick zurEk und nach Vorn*. Berlin: Sigma.

Lorente, Santiago (2002): Youth and Mobile Telephones: More than a Fashion. In: Revista de Astudios de Juventud 57, June 2002, pp. 9-24. http://www.mtas.es/injuve/biblio/revistas/Pdfs/numero57ingles.pdf

Lohan, E Maria (1997): 'Men, Masculinity and the Domestic Telephone. A Theoretical Framework for studying Gender and Technology'. http://www.dcu.ie/communications/iegis/Marial2.htm

Matti Haverila, (2011),"Behavioral aspects of cell phone usage among youth: an exploratory study", Young Consumers: Insight and Ideas for Responsible Marketers, Vol. 12 Iss: 4 pp. 310 – 325

Mary Meeker (2012, May). *Internet Trends*. Retrieved Jan, 2013, from KPCB website: http://kpcb.com/insights/2012-internet-trends

Mizuko Ito and Okabe Daisuke, 2000, Mobile phones, Japanese youth and the re-placement of social contact

Naz, Arab, Khan, Waseem, Hussain, Mohammad and Daraz, Umar, The Malevolence of Technology: An Investigation into the Various SocioEconomic Impacts of Excessive Cell Phone Use Among University Students(A Case Study of University of Malakand, KPK Pakistan) (June 12, 2012).*International Journal of Academic Research in Business and Social Sciences*,October 2011, Vol. 1, No. 3.

Sayan Chakraborty (2006, April). Mobile phone usage patterns amongst university students: A comparative study between India and USA. A Master's Paper for the M.S. in I.S degree.

Shari P. Walsh, 2009, A thesis submitted as fulfillment for the Degree of Doctor of Philosophy, A psychosocial approach to understanding young Australians' mobile phone behavior.

Simon Khalaf (2012, Dec). *Mobile Apps: We Interrupt This Broadcast*. Retrieved Jan, 2013, from blog of flurry analytics' website: http://blog.flurry.com/bid/92105/Mobile-Apps-We-Interrupt-This-Broadcast

Taylor, A. S. & Harper, R. (2003) The gift of the gab?: a design oriented sociology ofyoung people's use of mobiles. *Journal of Computer Supported CooperativeWork (JCSCW)*. Vol. 12, no. 3, pp. 267-296.

Townsend, A.M., 2002. Mobile communications in the twenty-first century city. In: Brown, B., Green, N., Harper, R. (Eds.), Wireless World: Social and Interactional Aspects of the Mobile Age. Springer, New York, pp. 62–77.

Turner,M., Love,S., Howell,M. 2008. Understanding emotions experienced when using a mobile phone in public: The social usability of mobile (cellular) telephones .*Telematics and Informatics*, 25(3), 201-215.

van Biljon, J., Kotzé, P., & Renaud, K. (2008). Mobile phone usage of young adults: the impact of motivational factors. *Proceedings of the 20th Australasian Conference on Computer Human Interaction: Designing for Habitus and Habitat*, 57-64.

Walsh,S.P., White,K.M. and Young,R.M. 2008. Over-connected? A qualitative exploration of the relationship between Australian youth and their mobile phones. *Journal of Adolescence*, 31 (1), 77-92.

Waldman, L., Sheets, B. H., Jones, C. L., & Nichols, P. (2005, Fall). Cell phone usage among college students. *Journal of Business and Training Education*, 14, 15-20.