THE REPUBLIC OF TURKEY

BAHCESEHIR UNIVERSITY

FACTORS INFLUENCING MOBILE TRANSACTION APPLICATIONS USAGE IN TELECOMMUNICATION SECTOR

Master's Thesis

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THE REPUBLIC OF TURKEY

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MARKETING

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ABSTRACT

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Recent developments in communication sector make fundamental changes in the behavior of customers and users when making transaction with their telecom operators. Mobile transaction applications as an attractive product is becoming more helpful for reducing cost and saving time in mobile industry.

Rapid technologic developments in mobile devices started to effect before both consumers and operators. Operators provide various alternative transaction channels as mobile transaction applications to their customers to save cost and gain more loyal customers. The aim of this study is to understand the impact of main factors of technology acceptance model dimensions that are perceived ease of use, perceived security and privacy, trust, social influence, performance expectancy, perceived usefulness, perceived compatibility, cost effort and perceived risk on usage of mobile transaction applications in Turkey. In order to collect data, an online survey has been applied to 145 respondents which are chosen by snowball sampling method. According to results of this research, perceived efficiency and perceived usability explains actual usage of online transaction systems.

Keywords: Use of Mobile Transaction Applications, Telecommunication Sector, Mobile Marketing

ÖZET

TELEKOMÜNİKASYON SEKTÖRÜNDE MOBİL İŞLEM UYGULAMALARININ KULLANIMINI ETKİLEYEN FAKTÖRLER

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Telekomünikasyon sektöründeki güncel gelişmeler cep telefonu kullanıcılarının telekom operatörleri ile yaptığı işlemler için kullandıkları kanallar bakımından temel değişikliklere neden olmaya başladı. Mobil iletişim sektöründe, cep telefonlarındaki işlem uygulamaları müşteriler için zaman kazanma, operatörler için maliyet azaltma bakımından en etkili ürünlerden biri olmaya başlıyor.

Mobil cihazlardaki hızla artan teknolojik geliştirmeler operatörleri ve müşterilerini yakından etkiliyor. Bu çalışmanın temel amacı, Türkiye'deki, mobil operatörlerin sağladığı mobil işlem uygulamaları için teknoloji kabul modelini kullanarak algılanan kullanım kolaylığı, algılanan güvenlik ve gizlilik, güven, sosyal etki, performans beklentisi, algılanan fayda, algılanan uygunluk, maliyet etkisi ve algılanan risk faktörlerinin mobil işlem uygulamalarının kullanımına etkisini incelemektir. İnternet üzerinden cevaplanabilen bir anket oluşturularak kartopu örneklem belirleme yöntemi ile belirlenen 145 katılımcıdan anket cevapları topladı. Bu çalışmanın sonucunda algılanan kullanılabilirlik ve algılanan verimlilik mobil işlem uygulamalarının kullanımını açıklamaktadır.

Anahtar Kelimeler: Mobil İşlem Uygulamalarının Kullanımı, Telekomünikasyon Sektörü, Mobil Pazarlama

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ABBREVIATIONS

CLC	:	Customer Life Cycle
CRM	:	Customer relationship management
GSM	:	Global System for Mobile communication
IVR	:	Interactive Voice Response
LBS	:	Location-Based Services
MTS	:	Mobile Telephone Service
MMS	:	Multimedia Messaging Service
OTA	:	Online Transaction Application
OTC	:	Online Transaction Centers
SMS	:	Short Message Service
SST	:	Self Service Technology
SSC	:	Self Service Channel
USSD	:	Unstructured Supplementary Service Data

1. INTRODUCTION

Mobile transaction applications have penetrated to telecom sector as well as other sectors. Telecommunication sector changes its transactions with customers from face to face to computer integrated environment with the development of m-commerce. Although transaction applications are used by many people, they still need more time to be totally accepted by the society. The benefits of mobile applications have strong influence among other technologies. They are more beneficial for customers and organizations in time and efforts. The benefits of mobile transaction applications are stated as enhanced accuracy and fast financial guidance, reduced cost and minimizing unnecessary travels, traffic and air pollution for both operators and customers.

The mobile phones are multifunctional devices, which support voice communication, sending SMS, MMS and email, sharing videos and pictures and playing games. They are also used for advanced services like mobile applications. Information technology is the main factor for mobile applications sector, getting stronger by increasing speed and confidence of financial operations (Dangolani 2011). Mobile transaction applications are clarified systems which supply access to operators by mobile devices to use telecom services such as checking account balances and paying bills (Zhou 2012; Amin et al. 2007). They support customers in managing financial affairs with mobile phones (Al-Somali et al. 2009).

Moreover, taking a rapid report from the previous transactions in details is provided in real time. This leads to significant predicted relationship between the operators and customers.

In the first part of this study an introduction is made for the research topic. In the second part of this study, a detailed literature review is made about transaction channels in telecommunication sector especially online channels, mobile marketing and tools. The third part consists of data and methodology of the study. In the next part, findings is evaluated. The final part consists of the discussion and conclusion.

2. LITERATURE REVIEW

Mobile transaction applications of telecom operators enable customers to access information of subscriptions or make transactions through mobile devices to conduct and complete transactions such as checking remain credit, checking bill information, paying bill and selling packages. Luo et.al (2010) defined mobile transaction applications as an innovative method for accessing operator services via a channel whereby the customer interacts with the operator using a mobile device. Luo et.al (2010) also stated that new and developed technologies have a great effect on developing more comfortable and user friendly application services. Recently, the mobile transaction applications have received greater attention in the telecommunication market based on internet based services.

Because of the special features of the mobile devices, the mobile channel has become an important marketing tool which allows business entities to find an electronic way reaching their customers anytime and anywhere. Since international firms noticed its business potential, mobile services have penetrated virtually to people's lives. Leaving aside the unique opportunities provided by mobile services in building and maintaining customer relationships, mobile advertising itself became a great revenue generator (Varnalı and Toker 2010).

Rapid developments in communication technologies are causing main changes in daily activities and business habits. It is currently getting harder to predict the next generation devices and services due to the unforeseen growth. Authorities and organizations are generating new strategies to apply newer technologies to survive in the competitive market. Increasing tendency toward mobility is simply because of the value of time, location restrictions and security (Öztaş 2015).

2.1 MOBILE MARKETING

Mobile marketing is defined as "*a bilateral marketing tool which is used for promotion activities of products, services or ideas using mobile phones to support the marketing activities of the companies and all of their stakeholders*" (Scharl, Dickinger and Murphy

2005; Wiedemann, 2007). In consideration of this definition, mobile marketing can be clarified as all the activities ought to communicate with the customer via using mobile devices in order to support the selling of goods or services.

Marketing trends and concepts are changing by the time with the environmental and technological effects. Generally, firms are trying to adopt themselves to this change. Today, companies are trying to use new technology based on mobile phone systems with the support of mobile oriented applications in their business processes. Normally, companies try to use these technological improvements for their marketing and sales activities. In addition, developments in communication sector for last ten years, such as social media change the way of marketing (Gulbahar and Yildirim 2015).

Progressively, marketers view mobile devices as a glamorous platform to interact with customers via different types of marketing communications, including location-based promotions and mobile advertising. Sultan, Rohm and Gao (2009) state that launching of Apple's iPhone and the introduction of Google's mobile platform cause to concentrate on technological improvements of mobile devices to use for marketing communications in the mobile devices sector. Additional reports show that some global companies are shifting huge amounts of their marketing budgets to mobile marketing platform (Richtel 2006).

Consecutively, the reasons why mobile phones are important for marketing are shown below (Yuan & Cheng 2004):

- Mobile phones are always open to communicate;
- The customers always carry their mobile phones with them;
- With mobile phones, it is possible to have effective one-to-one connection with customers;
- Convenient for customers and efficient for the marketing executives.

The literature shows that, mobile phone has been a very powerful tool in marketing and sales (Howard 2003; Yuan & Cheng 2004; Scharl, Dickinger and Murphy 2005). Higher essentially, mobile marketing gives an opportunity which cannot be provided by traditional methods of advertising (Pousttchi and Wiedemann 2007).

2.1.1 Mobile Marketing Tools

Mobile devices have evolved from simple talk-based services to multiple functions like listening music, video call and some other functions. Current developments in mobile technologies (such as smartphones or tablets) have started to turn the mobile devices into attractive, innovative and powerful platforms which bond consumers to brands (Shankar, Venkatesh, Hofacker, & Naik 2010). Certainly, the increase in the worldwide penetration of mobile devices has effected the development of mobile marketing (Rohm and Sultan 2005).

Technological improvements in mobile communication have started to promote new platforms for brand–consumer interaction (Shankar and Malthouse 2007). Since the mobile phones are improving, becoming cheaper and also usage costs are decreasing when compared with traditional media, these new dynamics play a crucial role in the increase of mobile marketing share in marketing communication. According to Öztaş (2015), there is no reason left for marketing people not to break with the tradition and use mobile marketing.

Throughout the world, mobile communication technologies have penetrated in consumer markets. Recently, new forms of mobile services have made text messaging, web surfing, digital imaging, mobile payments, banking, financial instrument trading, and shopping possible. SMS marketing, Mobile Survey, Location Based Marketing, Mobile Advertising, Mobile Payment and Mobile Application are commonly used mobile marketing tools.

2.1.1.1 Sms marketing

Text Messaging (SMS) is a communication service that permits the exchange of text messages between mobile phones limited to 250 characters. Besides, SMS marketing is used as a one-to-one business platform for customer communication that proposes potential for enhanced customer relationship management. SMS is also used for marketing of a telecom operator’s services and products and is also a transaction channel (Laukkanen and Kiviniemi 2010).

Concerning the type of mobile advertising, primarily SMS has a domination of advertising in mobile marketing. The premises of mobile advertising has been used alternatively to

SMS or text message advertising, where ad messages are sent via mobile phones in text format (Demirel 2011).

Breune (2007) states that the most effective feature of SMS marketing is that all of the mobile phones have text-messaging ability. It is fast and most of the users know how to text a SMS and can be used when there is a the cellphone network. Besides, SMS service has no extra huge cost for costumers and difficulty.

A major component of mobile marketing communication is advertising, either in a push and pull mode. After retrieving the consumer's permission, push advertising sends compatible but not clearly demanded text messages. Scharl, Dickinger and Murphy (2005) claimed that the push model with SMS dominates mobile advertising since it saves consumers' time and money.

2.1.1.2 Mobile survey

The fast and penetrant dispersion of mobile phones is enlightening a trend towards the usage of mobile surveys in research as one of the main survey tools. Some researchers compare these research types. Vicente, Reis and Santos (2009) state that mobile phone can be used to gather data easily comparison with internet and other ways. Findings exposed crucial differences between mobile phone responders and fixed phone responders in terms of demographic characteristics and other dimensions. Regarding data quality, the mobile phone survey is proven to be different from the fixed phone survey in two aspects: completion time and percentage of respondents with item errors and omissions.

However, mobile phones based surveys poses a set of technical, costly and ethical issues that are apart from those associated with fixed phone surveys. The usage of mobile phones to conduct surveys have some trouble as sampling frames, responders' qualification, interview length, nonresponse rates, costs and respondent attitude, as well as posing some ethical concerns (Tucker et al. 2007).

2.1.1.3 Location based marketing

Having well-established great customer loyalty, cellular service providers will explore new ways to guarantee customer loyalty by offering new types of services. Location Based

Services are the most encouraging type of services which are also called value added services (Ververidis and Polyzos 2002).

Location Based Services are services which are based on mobile station's position information. Companies are using these information to make specific offers to their customers. Location Based Services provide the customer some mobile services with personalized information according to their position (Ververidis and Polyzos 2002).

Information about the end user's location is used to deliver appropriate, timely, and engaged information to the mobile user. Rao and Minakakis (2003) state that for mobile network operators, location-based services perform an additional flow of earning that can be created from their investments in fixed infrastructure. For the end user, LBS can enhance the consumer experience, and deliver high-quality service options.

With the widespread adoption of mobile devices and data, operators have been disposed to utilize information of customer they have achieved over time. Location of the customers has conventionally been difficult to pinpoint and provide dynamism and uncertainty. Location plays an important role in evaluating the customer activity. When a mobile service provider knows the end user's certain location, then it is possible to target useful (and billable) information at that point in time (Rao and Minakakis 2003).

Location-based services have attracted attention of the firms since they are searching for new opportunities to offer their customers. The ability to identify the customer's location at an exact time is one of the most promising applications of mobile advertisement. Positioning techniques help service providers to offer entirely new services or add value to their customers (Pura 2005).

2.1.1.4 Mobile advertising

Mobile advertising can be considered as an important part of mobile commerce and it is an integral part of mobile marketing (Ververidis and Polyzos 2002).

Due to the great developments in communication technologies of mobile devices and increase in penetration rate of the Internet, mobile commerce became an important application for both enterprises and consumers (Wu and Wang 2004). Marketers have

released advanced mobile phone advertising services, such as Internet mail, messaging, mobile applications, picture mail, Internet browsing, mobile commerce and mobile advertising (Stafford and Gillenson 2003).

Recently, mobile devices are increasingly getting significant as a digital-enabling multimedia channel for the advertising area. Demirel (2011) stated that parallel to the technologic improvements in advertising, penetration of advertising via mobile devices has generated as a critical method for interaction with consumers in an effective way.

Compared with the other methods of advertising such as traditional media, it can be assumed that mobile advertising has an advantage to be proper for consumer needs and expectations to build, sustain and improve the relationship between consumers and companies (Demirel 2011). More critically, firms and marketers need to realize the evaluations and perceptions of consumers regarding mobile phones as a medium for advertising (Usta 2009). Harte (2008) also explains that mobile advertising is "*the communication of messages or media content to one or more potential customers who use mobile devices*".

Mobile advertisements via mobile web, mobile games and mobile applications are significantly more effective and persuasive compared to other methods of mobile advertising. Together with mobile phone technology, video games and mobile phones are prior to the companies for the use of embedded mobile ads (Demirel 2011).

Mobile advertising offers consumers personalized information at any time of the day, according to their interests and location. As a consequence, the authors define mobile marketing as using a wireless medium to provide consumers with time and location based sensitive, individual information that encourage products, services and ideas, thereby benefiting all stakeholders (Scharl, Dickinger & Murphy 2005). Likely, research shows that the success of mobile advertising depends on the consumer acceptance in response to the advertisements via mobile devices (Keshtgary & Khajehpour 2011).

2.1.1.5 Mobile payment

The extensive usage of mobile devices and their continuous intimacy to customers make them appropriate for mobile payment scenarios without the requirement for a physical wallet (Mallat 2007). Mobile payments permitted consumers to remove the necessity to use cash and offering confidence and speed. Performance and transfer of secure knowledge between devices, from single or personal transactions, make high amount of payments, such as restaurants or large retailers (Leong, Hew, Tan, & Ooi 2013). Both companies and consumers get the advantage of respected operation time decline, with clear productivity gains. Merritt (2011) claimed that mobile payment is experiencing a fast growth in lots of markets as more and more trading entities notice the potential of it. Dahlberg, Mallat, Ondrus, and Zmijewska (2008) define mobile payment as payment for products, services, and bills with a mobile device such as mobile phone or personal digital assistant by receiving advantage of communication technologies.

Dahlberg et al. (2008) emphasized a definition for mobile payments to refine the concept, which had been subject to different explicating. Mobile payments were clarified as "*payments for goods, services, and bills with a mobile device by taking advantage of wireless and other communication technologies*". Besides, they claimed that a mobile payment is done with a mobile payment tool like a mobile credit card or a mobile wallet.

With the partnership of the banks between financial services and mobile network operators produces a suitable place for purchasing products and services via mobile devices across both physical and virtual traders alongside to pay bills and transfer funds (Nurdilek and Ali 2012). Riquelme and Rios (2010) state that mobile phones will be replaced with wallets for financial transactions in the near future.

2.1.1.6 Mobile application

Plant (2006) states that specific consumer segments such as young segment uses mobile phones gradually as the single-source of communication. Mobile devices and mobile applications give the retailers more chance than only reaching the customers. Mobile devices also offer opportunities to compound knowledge, phone performance and

interaction while shopping in-store or using a product. A mobile device is a stable take out to the customer, a pass to a relationship between the consumer and the company, making it an ideal subsidiary channel for distance selling and physical retailing (Shankar et al. 2010).

With technological development and market competition, mobile phones are redesigned for multi purposes over the typical duties such as voice calls and texting. Different types of specifications and applications are integrated to smart phones. Mobile applications are extensive on most modern phones, and compose of software that goes on a mobile device and works for the customer of the mobile phone. These applications are created by mobile application developers and providers. Also, mobile applications have popularity among many marketers. For instance, the Apple Store's catalogues promote hundreds of applications, and these can be in various categories such as entertainment, sports, games, news, social networking, travel and weather (Liu,2012).

Adoption of technological improvements will become important and these improvements will enhance to make a contribution in devices like tablets, mobile phones, and computers (Jared and Sigar 2014).

2.1.2 Web Transaction Applications

The term "web based internet application" is used where firms' customers conduct with firms to make transactions on the internet. In the up to date content, it refers to usage of computers, but also lets other possible devices like mobile phones, tablets, etc. to access internet branches. "Internet branch" is used as the name of the platform where the transactions are made. An internet branch is an important part of an operator's web site and generally, the web site provides the entrance to open the internet branch.

Improvements in new technologies are changing radically and also communication way is changing from traditional dealers to web based applications for companies. This change has been due to the start of internet technology and the descendent evolution of internet systems. The use of web based transaction applications may make transaction services for shrinking time and distance to the closest retail shopper (Sultan, Rohm and Gao 2009).

Internet transaction services have powerful effect on customers as they make it possible to conduct transactions anytime and anywhere, rapidly and with lower cost comparing with traditional dealers. Telecom operators are trying to create one-to-one relationships with customers like all other companies in other sectors. The Customer Life Cycle (CLC), which is a progression of steps a customer goes through when thinking, buying, using, and maintaining to a product or good, illustrates that a customer's financial behavior changes throughout his or her life using internet applications (Meer 2006). Consequently, new technologies have absolutely altered the ways how customers interact with the companies and how the service is created by the firm (Fui 2008).

2.2 TRANSACTION CHANNELS IN TELECOMMUNICATION SECTOR

Mobile transaction applications support operators to enhance their service quality and decrease their service cost. This is the reason why all operators in Turkey have introduced the technology of mobile transaction channels to its customers. Mobile business applications have been emerging rapidly in the world, supplying expanded content and services (Zhang, Zhu, and Liu 2012), encouraging stronger relationships than earlier ones between companies and customers (Riquelme and Rios 2010). From an information systems perspective, mobile business applications are one of the major technological innovations for companies which establish customer value by being independent from place and time (Lin 2012).

Developing alternative channels to keep existing customers, while attracting the new ones, is very important for businesses (Çalışır and Gümüşsoy 2008). For this reason, companies offer new self-service channels to their customer. For example, in the last few years, self-service channels have been replaced with other face to face physical channels (Eriksson and Nilsson 2007).

Self-service technologies (SST) allow customers to use technology to transact via mobile phones without direct face to face personal contact with the representative from the company (Fui 2008). Examples of available SST's and applications include automated phone system and mobile applications by the operator, transaction via the Internet such as Internet based transactions.

According to Alcock and Millard (2006) self-service technologies have access to enhance accuracy of services, rise competitiveness, enhance market share, create consumer satisfaction and loyalty, and gain productivity.

Adding technology to customers' daily activities has become more visible. Technology in communication media has enabled many service supliers also mobile operators to find new ways to make consumer transaction to the consumer (Lee, Kwon and Schumann 2005). Therefore, service providers will be willing and interested in understanding the process of consumer adoption for self-service technology to use them in formulating intimate marketing strategies to promote consumers to use self-service technologies instead of traditional channel (Fui 2008).

A channel is a mixture of means and media by which customer refers to communicate with the company via the inbound channel or to receive communications via the outbound channel. Alternative channels are the channels except the traditional dealers like internet, call centers, mobile phones and other channels which are based on information technology (Dych 2001).

The alternative channels of the mobile telecommunication sector are IVR, USSD, MTS, Call Center. These channels can give services to customers all day long. In this section; alternative channels that operators use in Turkey are presented.

2.2.1 Customer Care

Kohen (2006) described the first and main features of call centers as, helping the customers who have problem with operator services, collwcting thw receiving application complaints, apply or cancell a service, or collecting information about what they want to do, etc. The success of call centers depends on the effective service and low cost since speaking with customers causes a real 'cost'. But nowadays, as customers demand perfect services from all channels, call centers have become a critical customer connection tool.

Kohen (2006) suggests that call centers are primarily trying to fulfill a basic need that is communication. The major advantage of call centers is supplying this need easily and in a formal way. He also claims that other most important advantages of call centers are speed

and confidentially. By using the advantages of technology, customers contact with companies in lots of ways and more important thing is that it can be made easily, at the time they want and conveniently.

Consecutively, the reasons why mobile phones are important for marketing are shown below (Yuan & Cheng 2004):

The other advantages of call centers for firms are shown below (Çakıcı 2008):

- being a bridge between firm and customers for enhancing customer satisfaction;
- providing an ordinate and lasting data flow;
- assisting the efficiency of marketing activities;
- giving feedback for service development;
- gaining a positive effect to company image.

Information technology has reshaped relationships between companies and customers, frequently bringing benefits to both. A company must listen to what their customers, managers and front line employees say carefully in order to understand hem (Gorry and Westbrook 2010). But a sequence of 'innovations' aimed firstly to decrease the cost, has made lots of companies make mistake to their customers, who are insufficiently served and increasingly aborted. In many creative companies, technology has not brought worthless relations between businesses and customers (Gorry and Westbrook 2010).

2.2.2 Web Transaction Center

Operators offer alternative transaction channels so that customers can do transactions without going to branch. The developments in technology are in close relationship with the development of alternative channels. Çakıcı (2008) claimed that customers are pushed to use internet because of its low cost but in practice, channel selection differs and people want to use all the channels they can. He also stated that what the customer wants is using multiple channel which is excellent for operators as they can make cross channel activities.

Guasong (2007) claimed that, the progression in the internet has an important effect on operator services that is traditionally offered by the branches to the customers. With the help of the internet, customers can make their transactions anytime and anywhere as

internet access is available. Walker and Johnson (2006) state that the combination of computer, telecommunications and internet technology has been widely used for various services to enhance the condition of financial services, booking and retail shopping services.

2.2.3 Mobile Channels

Öztaş (2015) argues that mobile communication technologies offer many services that enhance the people's quality of life. These are SMS referred to texting (Short Message Service) and the transfer of documented information that is MMS (Multimedia Messaging Service) which increased the information exchange supported by audio, visual and imagery means. Mobile phone is a means of communication that people use if they are on the go and need to communicate with others (Öztaş 2015).

Technological changes and innovations provide huge advantages for modern commerce. Instead of providing financial profit, some companies invest in mobile technology to gain greater competitive advantages. Businesses from last few decades have diverted their focus on information technology especially on mobile technology as an integral part of their operations (Oliveira et al. 2014).

2.2.3.1 Mobile transaction center

Mobile transaction applications are simply the usage of cell phone stations like mobile and personal digital assistants to contact operator system through wireless application protocol. With the help of mobile transaction applications, customers can gain favorite operator facilities such as information inquiry, bill payment, credit control, bill payment and money transfers etc. (Luarn and Lin 2005). Increasingly, technology is used to enable a wide range of services, and for managing the relationship between customer and service providers.

Mallat, Rossi & Tuunainen (2004) claimed that the large penetration of mobile phone and the positive experiences have made applicable mobile solutions for different business services. The mobile transaction center is defined by Riivari (2005) that there are three times as many mobile phone users as those who use online personal computer and they are ready at anywhere and anytime where mobile applications match their life.

Breune (2007) explains that one-time downloadable mobile transaction applications offer secure login, balance control, bill payment etc. It is easier to use mobile web sites via interet browser. Also users feel more confident with one time downloaded applications and they usually have better interfaces than most of the web sites. Mobile transaction center can be explained as a type of execution of services which the customer uses mobile communication techniques applicable to mobile devices or as a service whereby customers use a mobile device to access operator services and fulfill financial transactions (Baptista and Oliveira 2015).

2.2.3.2 Interactive voice response

Many companies have adopted a wide range of technologies in the process of service delivery through interactive voice technology (Alcock and Millard 2006). Interactive Voice Response (IVR) is a software application that adopts a combination of touch-tone keypad selection and voice telephone input and supply appropriate responses in the form of voice, callback, e-mail and other media. IVR is usually a part of a greater application that consists of database access. An IVR system is used as an alternative channel to let the customers do self-service transactions via the phone and let them make operations that update the customer database. The system gives users a menu of choices designed for doing transactions or getting information to user. Telecommunication companies use IVR systems so that customers can receive most recent account information. IVR technology is also used to collect information, as in the case of telephone surveys in which the user answers questions by pushing the numbers on a touch-tone keypad (Alcock and Millard 2006).

Interactive voice response is also defined by Kohen (2006) as an interactive answer system by sound which gives exchange of information by attaining the information systems from telephones, directed by keys or sound. Using the IVR system for the organizations saves cost rather than using human labor. This increases the productivity, customer satisfaction and provides cost benefit (Çakıcı 2008).

2.2.3.3 Unstructured supplementary service data

Unstructured Supplementary Service Data (USSD) is one of the recent technologies which is integrated with mobile phones and has capabilities in transporting information via GSM networks channels. This technology has made a significant difference in the SMS technology (Sigar and Jared 2014). USSD is a communication protocol used to send text between a mobile phone and operator systems. It is a messaging service used in global system for mobile communication (GSM) networks similar to SMS, where it sends data utilizing the signaling channel (Sanganagouda 2011).

Sigar and Jared (2014) stated that USSD operates much like SMS but session-based and interactive nature distinguishes it. Unlike SMS, it does not operate by store-and-forward and its response time is much shorter for interactive applications than it is for SMS. This makes USSD much faster and very cost effective as it involves simple operations that are also handset independent. Sigar and Jared (2014) also claimed that USSD technology can be widely adopted due to its benefits such as cost efficiency, lower customer cost, lower marketing cost, faster communication between the mobile user and service providers and anywhere-everywhere technology.

Unstructured Supplementary Service Data (USSD) codes, also known as short codes, are simple to use. They consist of asterisk (*), followed by a combination of digits (0 to 9) and a hash (#). Users can enter the USSD string and press the call key to send a message (Sanganagouda 2011). Although USSD is used so often in daily life. The most known USSD channel which is called *123# is used for checking balance of the prepaid card's in Turkey (Taşkın 2012).

2.2.3.4 Social media

Social media services are effectively used by people who have a tendency to make social interactions with others via online. In the past, social media was not an increasingly significant research issue but nowadays some research has been published due to its ability to give more various ways of communicating with others compared with traditional communication (Harrison& Gilmore, 2012; Park, Yun, Holody, Yoon, Xie, & Lee 2013;

Sultan 2014). An important part of many users' daily lives in the widespread digital environment is social media (Hargittai 2007). Hargittai (2007) also claimes that social media marketing efforts have to be compatible and aligned with the diversified needs of social media users. It has become a new communication way of B2C business (Zhu and Chen 2015).

Kietzmann, Hermkens, McCarthy, and Silvestre (2011) stated that a company must improve its strategies that are compatible with different social media strategies according to the aims of the company. Researches show that suitability of advertising and web-site context will enhance positive reactions toward ads (Zhu and Chen 2015).

Kaplan and Haenlein (2010) state that people now see mobile social media as a group of mobile marketing applications that let the invention and enhance of user generated content. Companies connecting in mobile social media frequently have some sort of information about the consumers with whom they are in relationship, such as recent geographical location in time or space.

One of the most important changes in human interaction is the current proliferation of online social networks. Fast growth of web based platforms that enable online social behavior has importantly qualified the nature of human activities, habitats, and interactions. Real world social relationships have migrated to the virtual world, out coming in online communities that get people together from across the universe (Tiago and Verı´ssimo 2014).

When most consumers engage with social media, firms started to engage with social media as well. In the past, marketers used e-mail marketing, other direct marketing tools, informational websites, television, radio, and other mechanisms to spread information coupled with the firm or its services (Tiago and Verı´ssimo 2014). Of course, companies have routinely talked to their customers but the critical difference between past and present in this regard is that now, online social media tools allow customers to respond to firms (Mangold & Faulds 2009). Digital social media gathers lots of benefits to companies. Web can be used for publishing, online sales, market research, and customer support (Tiago and Verı´ssimo 2014).

Mobile applications can be another type of social media marketing. Concentrating on mobile social media and mobile marketing, Kaplan (2012) gives four advices to companies; to merge their activities into their users' life, to avoid being a distress, to individualize their activities to consider the user preferences and interests, to engage the user through attractive conversations and to start the creation of user-generated content. Companies using mobile social media are often well-equipped with data about their consumers.

2.2.4 Telecommunication Sector in Turkey

In recent years, communication has been growing and developing very fast in Turkey as many other countries of the world. Today, all people in the world have the mutual need to communicate with others, friends, families wherever they are. Within this common need, people need various communication requirements (Tosun, Güngör and Topçu 2008). Turkey has an important mobile communication sector in which there is a strong competition of Turkcell, Türk Telekom and Vodafone, three biggest GSM-based mobile communication operators.

New technologies and need of communication among people are rapidly increasing. In the telecommunication sector in Turkey, it is significantly enhancing for mobile communication companies, as a developing country. People who desire to get advantage of mobile communication need to use one of three mobile communication operators in Turkey.

Demirel (2011) claimed that Turkey tempts the awareness of marketers with regard to the rapid penetration of new technology and potential youth generation who is convenient to adopt innovations and mobile technologies.

Turkey has great level of young population and it is an important mobile market for the firms in order to conduct their creative mobile advertisements. In particular, the biggest mobile operators in Turkey which are Turkcell, Vodafone and Türk Telekom are controlling the field of mobile marketing. Besides, together with its younger and technology adapting population, fast consumption cycle and rapid adoption of the

technologies, Turkey is one of the countries especially important for mobile marketing (Aktas 2010).

2.2.5 Technology Acceptance

Technology Acceptance Model (TAM) is defined as the most famous and norm model for viewing the acceptance of a technology (Davis 1986). In recent years, TAM model has become more popular because it produces to contribute regression between factors and the user acceptance of a specific technology (Davis 1989).

2.2.5.1 Definition of technology acceptance model

Davis (1989) used Technology Acceptance Model (TAM) to give a theoretical examination to user acceptance of information systems in organizations. It is a useful theoretical model that has been supported by many empirical research. So, the tools used by the model have proven their quality and statistical reliability. Legris et al. (2003), determined the main objective of the model as to find out the impact of external variables on internal beliefs and attitudes.

According to Davis (1989), the aim of TAM is to get an explanation of the determinants of information technology acceptance which is general explaining of information technologies and users from beginning to end-user.

2.2.5.2 Factors influencing mobile transaction usage

2.2.5.2.1 Perceived expectancy (PE)

Performance expectancy expressed user perception of performance improvement by using mobile application such as payment confidentially, rapid response, and service effectiveness (Zhou et al. 2010). When customers feel that mobile application is easy to use and does not need much effort, they will have a high expectation for expected performance.

2.2.5.2.2 Perceived usefulness (PU)

TAM shows that perceived usefulness fundamentally confirms user perceptions and approach towards a technology (Davis 1986). Perceived usefulness is originally referred to

the level to which a customer believes that a system or technology enhances the usage of mobile application (Davis 1986).

2.2.5.2.3 Perceived ease of use (PEOU)

Perceived ease of use is specified as one of the main variables of TAM and it is defined as people's subjective decision about performance and effort. Enhancement in the people`s mobile application usage is the primary goal to achieve while in perceived ease of use having a free of effort system is a considerably objective (Hanafizadeh, Behboudi, Koshksaray, Tabar 2014).

2.2.5.2.4 Perceived security and privacy (PSP)

Customers want a secure environment for their privacy because of the potential risk in the mobile context (Amin 2007). One of the people's important concern about the adoption of mobile application services is the transfer of their personal data without their permission. Security has been a concern for customers and producers and it will be conceived even more crucial in operator systems. The more people are guaranteed about the security of the system and their personal privacy, the more likely they will trust and adopt mobile transaction applications.

2.2.5.2.5 Perceived compatibility (PCOM)

Perceived compatibility is explained as the level to which an organization is related with the existing values and ideas, past experiences, and contemporary requirements (Siddik, Sun, Yanjuan and Kabiraj 2014). The more compatible with lifestyle means the higher chance of impressive customers to use mobile transaction applications. Hence, suitability of mobile applications with user's lifestyle will cause a preferable adoption of mobile applications.

2.2.5.2.6 Trust (TR)

Researchers claim mobile applications as a generated mobile service from the perspectives of trust. In the technology acceptance model (TAM), Hanafizadeh, Behboudi, Koshksaray, Tabar (2014) state that there is an effect of trust on mobile application user adoption. Luarn & Lin (2005) claim the factor of trust has relative advantages of mobile transaction

applications, since TAM has been used to identify possible factors influencing mobile transaction applications users' behavioral intention.

2.2.5.2.7 Social influence (SI)

Al-Somali, Ghomali & Clegg (2009) define social influence as an individual self confidence that opinion of influence play a crucial role on the way of using a new technological system. They also claim this variable as one of the main factors which may affect the behavioral attention of technology. Users have more tend to use mobile application when they are affected by social trends.

2.2.5.2.8 Perceived cost (PC)

Cost and service fees are mostly described as an objection for accepting new technologies. Mobile application customers are mainly not interested in mobile applications due to cost benefits and confidence of products (Hanafizadeh, Behboudi, Koshksaray, Tabar 2014). One of the effective factors for encouraging customers is the improvement of the level of system's performance to use mobile applications.

2.2.5.2.9 Perceived risk (PR)

Different types of risks can appear when using online transactions. When customers feels a deficiency about product quality, brands and online services, they may worry about the transactions which can be payment without receiving the product or other illegal activities and fraud (Al-Jabri 2015). The entity of perceived risk has become popular after online transactions. Today, perceived risk refers to clear kinds of financial risk, product performance, social, physical, or time risks when consumers make transactions online (Mulaomerovic and Trappey 2013). Credit ratings, account information and financial data could be changed or lost without knowing the unreal owner during online transactions.

2.2.5.2.10 Actual usage (AU)

Mobile transaction applications are clarified systems which supply access to operators by mobile devices to use telecom services as bill paying, tariff changing, loading credit, checking account balances and remains, buying pack and making complaint. Thus in the survey, the frequency of usage of these transactions will be collected. Çakıcı (2008) claims

that dependent variable of actual usage is the last item of the technology acceptance model and it can be used to measure regression among independent variables.

3. DATA AND METHODOLOGY

In this research, quantitative approach is chosen to test the hypothesis stemming from the research aim.

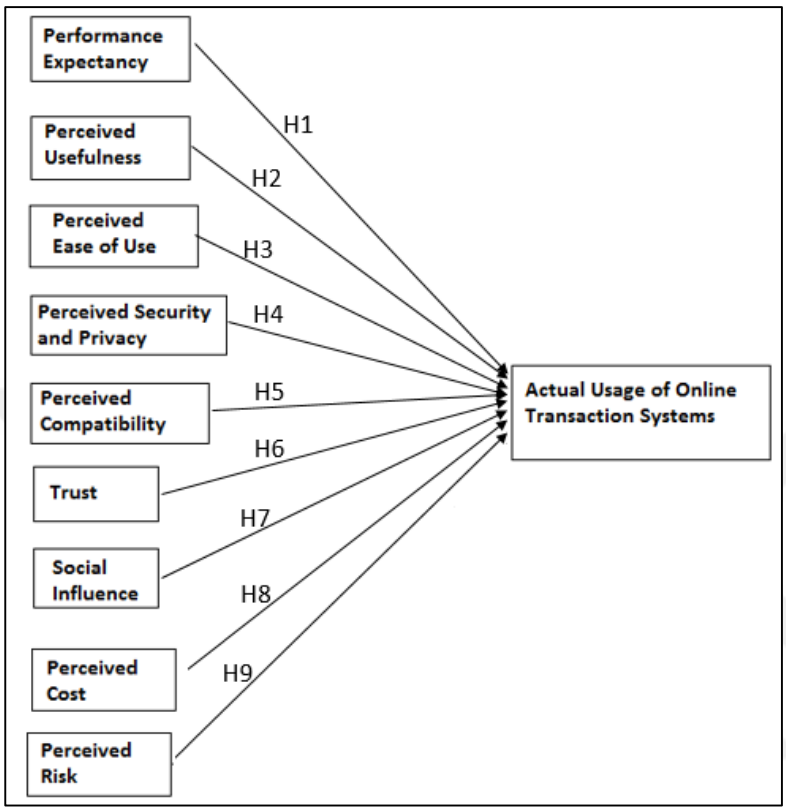
3.1 THE AIM OF THIS STUDY

This study aims to understand the factors influencing the actual usage of online transaction systems in Turkey. There is a group of factors as main factors which stands for the innovation attributes: performance expectancy from Zhou et al., (2010) and Foon and Fah (2011), perceived usefulness and perceived compatibility from Siddik, Sun, Yanjuan and Kabiraj (2014), perceived ease of use, trust, cost effort from Hanafizadeh, Behboudi, Koshksaray, Tabar (2014), perceived security and privacy from Amin (2007), social influence from Al-Somali, Ghomali and Clegg (2009), perceived risk from Al-Jabri (2015), Mulaomerovic and Trappey (2013).

3.2 RESEARCH MODEL AND HYPOTHESIS

This research covers the variables of performance expectancy, perceived usefulness, perceived compatibility, perceived ease of use, trust, cost effort, perceived security and privacy, perceived risk. Figure 3.1 shows the research model and the related hypotheses are listed below.

Figure 3.1: Research Model



H1: Performance expectancy will influence actual usage of online transaction applications.

H2: Perceived usefulness will influence actual usage of online transaction applications.

H3: Perceived ease of use will influence actual usage of online transaction applications.

H4: Perceived security and privacy will influence actual usage of online transaction applications.

H5: Perceived compatibility will influence actual usage of online transaction applications

H6: Trust will influence actual usage of online transaction applications.

H7: Social influence will influence actual usage of online transaction applications.

H8: Perceived cost will influence actual usage of online transaction applications.

H9: Perceived risk will influence actual usage of online transaction applications.

The scales used to measure the independent variables, their developers and item numbers are given in the Table 3.2.1.

Table 3.2.1 Scales Used in Research

Scale	Developers	Item Numbers
Performance Expectancy	Zhou et al. (2010)., Foon and Fah (2011)	3
Perceived Usefulness	Wu and Wang (2004)., Siddik, Sun, Yanjuan and Kabiraj (2014)	5
Perceived Ease of Use	Hanafizadeh, Behboudi, Koshksaray, Tabar (2014)	4
Perceived Security and Privacy	Amin (2007)	3
Perceived Compatibility	Siddik, Sun, Yanjuan and Kabiraj (2014)	3
Trust	Hanafizadeh, Behboudi, Koshksaray, Tabar (2014)	3
Social Influence	Al-Somali, Ghomali and Clegg (2009)	4
Cost Effort	Hanafizadeh, Behboudi, Koshksaray, Tabar (2014)	3
Perceived Risk	Al-Jabri (2015)., Mulaomerovic and Trappey (2013)	4

3.4 DATA COLLECTION AND SAMPLING

In order to collect data, an online survey has been applied to respondents. The respondents are chosen by snowball sampling method which requires one respondent to direct the researcher to the others who are in the same target population is applied (Berg 2006). The reason to choose this survey technic was to engage respondents who were familiar with online environment and more integrated in internet technology. The respondents used one or more than one operator in Turkey.

4. FINDINGS

In this part, descriptive statistics, factor and reliability analysis and regression analysis are shown.

4.1 DESCRIPTIVE STATISTICS

145 participant participated in this survey as 80 (55.2 percent) are men and 65 (44.8 percent) women. Sample group consists of 69 (47,6 percent) participants under age of 25, 65 (44.8 percent) participants between age of 26 - 35 and 11 (7.6 percent) participants above 36 years old. Sample group's education levels are as follows; 22 (15.2 percent) participants are high school educated, 88 (60.7 percent) participants have Bachelors' degree, 35 (24.1 percent) participants have Master / Phd degree. Income levels of sample group are as follows: 39 (26.9 percent) participants earn under 2000 TL, 77 (53.1 percent) participants earn between 2001 – 5000 TL, 19 (13.1 percent) participants earn between 5001 – 7000 TL and 10 (6.9 percent) participants earn more than 7000 TL. 69.0 percent of participants from private sector, 17.9 percent of participants are students and 7.6 percent of participants from public sectors.

4.2 FACTOR AND RELIABILITY ANALYSIS

In the analysis part, for all independent variables, factor analysis and reliability analysis are conducted. Multiple regression analysis is held to examine the influence on independent variables (performance expectancy, perceived usefulness, perceived ease of use, perceived security and privacy, perceived compatibility, trust, social influence, cost effort, perceived risk) on the dependent variable (actual usage of online transaction centers). Also for dependent variable, reliability test is conducted.

The KMO and Bartlett's test results show that KMO value is 0,934 which means that it is appropriate to conduct factor analysis. And p value is showed less than 0,05 which shows the indicator of enough relationship among the main factors to conduct factor analysis (Table 4.2.1).

Table 4.2.1 : KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,934
Bartlett's Test of Sphericity	Approx. Chi-Square	4362,306
	df	496
	Sig.	**,000**

According to anti-image correlation matrices', there is no value below 0.500 diagonally, so these questions are acceptable for factor analysis.

Table 4.2.2: Total Variance Explained

Total Variance Explained						
	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	15,905	49,702	49,702	9,305	29,080	29,080
2	4,049	12,653	62,356	7,580	23,687	52,766
3	1,731	5,408	67,764	4,724	14,763	67,530
4	1,031	3,222	70,985	1,106	3,456	70,985

Question numbers 9, 10, 11, 12, 13, 14, 15, 18, 19, 20, 21, 22, 23, 24 and 25 are cumulated under factor one including factors perceived ease of use, perceived security and privacy, trust, social influence. Question numbers 1, 2, 3, 4, 5, 6, 7, 8, 16 and 17 are cumulated under factor two including factors performance expectancy, perceived usefulness, perceived compatibility. Question numbers 26, 27, 28, 29, 30, 31 and 32 are cumulated under factor three including factors cost effort, perceived risk. Besides, the new research model can be shaped with the questions shown at the table 4.2.3. When the questions under the factors are determined, it is seen that factor one includes questions about the benefits adopting mobile transaction applications, besides, factor one's new name is "perceived usability". Questions about factor two that consists of performance expectancy, perceived

usefulness, perceived compatibility are showing the attributes of efficiency factor that can be defined "perceived efficiency". Factor three consists of questions about cost effort, perceived risk, so its new factor name is "perceived financial risk".

Table 4.2.3: Research Model Questions Under New Factors

	No.	Questions
Perceived Usability	Q9	It is easy to learn online transaction applications
	Q10	Interaction with online transaction applications does not require a lot of mental effort.
	Q11	It would be simple for me to become skilled at using online transaction applications.
	Q12	It is easy to find what I want via online transaction applications
	Q13	Using the online transaction applications is secured
	Q14	I trust in the ability of online transaction to protect my privacy
	Q15	I am not worried about the security of using online transactions
	Q18	I believe that my mobile phone is compatible with online transaction applications technology.
	Q19	I would trust my telecom operator to offer secure mobile transaction applications.
	Q20	I would trust my mobile phone manufacturer to provide a mobile Phone which is appropriate for conducting mobile transaction application
	Q21	I would trust my telecom operator to provide secure data Connections to conduct online transaction
	Q22	I would consider using online transaction applications if someone personally recommended it
	Q23	When trying new technology, I trust my own instinct more than advice from others
	Q24	Most people who are important to me think that I should use or continue to use online transaction applications
	Q25	Use online transaction applications because many people use them
Perceived Efficiency	Q1	Online transactions optimizes my telecom line operations.
	Q2	Online transactions allows me to make my bill payments or other transactions quicker.
	Q3	I can save time paying essential bills at dealer.
	Q4	Adopting online transactions will allow me to conduct telecom transactions more efficiently.
	Q5	Adopting online transactions will enable me to accomplish telecom transactions more quickly.
	Q6	Adopting online transactions is a convenient way to conduct telecom operator.
	Q7	Adopting online transactions is useful for managing my telecom line
	Q8	Using online transactions would improve my performance in online transactions
	Q16	Online transaction applications are compatible with my lifestyle.
	Q17	Adopting online transaction applications fits well with the way I like to manage my telecom account.

Percevied Financial Risk	Q26	It would cost a lot to use online transaction applications
	Q27	I think that the internet access cost of using mobile phone transaction application would be high
	Q28	There are financial barriers to me using online transaction applications
	Q29	I feel apprehensive about using online transaction application
	Q30	I hesitate to use online transaction application for fear of making mistakes I cannot correct.
	Q31	I think using online transaction applications in monetary transactions has potential risk
	Q32	I'm worried to use online applications because other people may be able to access my account

According to results of the factor analyses, the research model is reshaped with a new model that is demonstrated in the figure 4.1. It has initiated to view when the critical factors are perceived usability, perceived efficiency and perceived financial risk. These new factors influence adoption of the mobile transaction application using. The hypotheses have been changed according to with the new factors. Three new hypotheses H10, H11 and H12 are added and all of other hypotheses are excluded from the research. Modified hypotheses table shows the current status of the hypotheses. Besides, the new hypotheses table shows the current status at the Table 4.2.7 below.

4.2.1 Evaluation Of The Factor Analysis

4.2.1.1 Perceived usability

According to the results of factor analyses, first factor is renamed as perceived usability. It is showed to involve questions about perceived ease of use, perceived security and privacy, trust, social influence. The questions are viewed detailed it is showed that they are all about usability of a mobile transaction application. Suoranta (2003) states that the benefits or the perceived usability of a system have effect on the adoption. So, perceived usability can be advantage of the mobile transaction applications for the customers over the adoption of mobile applications. Thus, a new hypothesis is created which is H10: Perceived usability will influence actual usage of online transaction applications.

4.2.1.2 Perceived efficiency

According to the results of factor analyses, factor two is renamed as perceived efficiency. Factor two is showed to involve questions about performance expectancy, perceived usefulness, perceived compatibility. The questions are viewed detailed it is showed that

they are all about the accessibility of using the mobile transaction applications, belief about the expectancy and efficiency of the applications. Thus, a new hypothesis is created which is H11: Perceived efficiency will influence actual usage of online transaction applications.

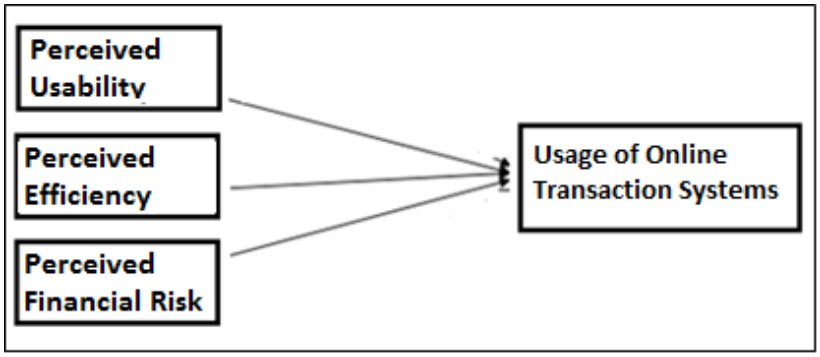
4.2.1.3 Perceived financial risk

According to the results of factor analyses, factor three is renamed as perceived financial risk. Factor three is showed to include questions about cost effort and perceived risk. When the questions are deeply analyzed, questions all about belief of high cost. Thus, a new hypothesis is created which is H12: Perceived financial risk will influence actual usage of online transaction applications.

Table 4.2.4: Modified Hypotheses

	Hypotesis	States
H1	Performance expectancy will influence actual usage of online transaction applications.	Ejected
H2	Perceived usefulness will influence actual usage of online transaction applications.	Ejected
H3	Perceived ease of use will influence actual usage of online transaction applications.	Ejected
H4	Perceived security and privacy will influence actual usage of online transaction applications.	Ejected
H5	Perceived compatibility directly positive will influence actual usage of online transaction applications	Ejected
H6	Trust directly positive will influence actual usage of online transaction applications.	Ejected
H7	Social influence will influence actual usage of online transaction applications.	Ejected
H8	Perceived cost will influence actual usage of online transaction applications.	Ejected
H9	Perceived risk will influence actual usage of online transaction applications.	Ejected
H10	Perceived usability will influence actual usage of online transaction applications.	Added
H11	Perceived efficiency will influence actual usage of online transaction applications.	Added
H12	Perceived financial risk will influence actual usage of online transaction applications.	Added

Figure 4.1 : Modified Research Model



Output of reliability analysis shows that Cronbach's Alpha value is 0.960, 0.953, 0.899 for three factors shown in Table 4.2.8 and all values are smaller than Cronbach's Alpha value and this means all factors are reliable.

Table 4.2.5: Reliability Statistics

	Cronbach's Alpha	**Number of Items**
Perceived Usability	0,96	15
Perceived Efficiency	0,953	10
Perceived Financial Risk	0,899	7

4.2.2 Regression Analysis

In the regression analysis part, multiple regression analysis is made to examine the influence on independent variables (perceived usability, perceived efficiency, perceived financial risk) on the dependent variable (actual usage of online transaction centers).

Cronbach's Alpha reliability is 0,96 for perceived usability, 0,953 for perceived efficiency, 0,899 for perceived financial risk.. In order to analyze the model and hypotheses, multiple regression test was made. The variables are researched p-value of the perceived efficiency (.000) and perceived usability (.044) are shown to become less than 0.05 so, these independent variables are determined to be statistically significant. But, since p-value of perceived financial risk (.181) are more than 0.05 so these are found as statistically insignificant.

So the multiple regression analysis is made without perceived financial risk factor. Then the model is statistically significant and can be used for perceived usability and perceived efficiency. R2 value is shown in Table 4.2.3 that independent variables explain %19,4 of the dependent variable and perceived efficiency explains positively dependent variable actual usage of online transaction systems (Beta=**0, 768**) and perceived usability explains negatively dependent variable actual usage of online transaction systems (Beta= **-0, 489**), As a result, hypothesis H10 and H11 are supported.

Table 4.2.6: Multiple Regression

Variable	B	Std. Error	Beta	t
Perceived Usability	-,498	,144	-,489	-3,466
Perceived Efficiency	,755	,139	**,768**	5,440
R2 =0.194, * p<0.05				

The multiple regression table shows the calculation of the multiple measures to find the regression.

5. DISCUSSION AND CONCLUSION

In this part, the results of the study will be determined and discussed with the previous literature. The progress of the research is viewed 32 research questions have been asked and in order to get answers to the research questions, a model has been created with several factors that are perceived ease of use, perceived security and privacy, trust, social influence, performance expectancy, perceived usefulness, perceived compatibility, cost effort and perceived risk. Additionally, nine hypotheses have been created. The hypotheses mainly focus on if there is influence of the related factor on the using of the mobile transaction applications. Factor analyses have been made for the these nine main factors to determine the significant factors that influence the dependent variable which is mobile transaction applications for mobile operators. As the result of factor analyses, three factors have formed. The questions collected under each related factors and three factors have been renamed as perceived usability, perceived efficiency and perceived financial risk. Later having three main factors regression analysis are made in order to understand which factors are significant and which factors effect usage of mobile transaction applications. Thus, a new research model has been created with new factors: perceived usability, perceived efficiency and perceived financial risk. The next parts include evaluation of them, contribution, managerial implications and limitations of the research.

5.1 CONTRIBUTION

This study demonstrates on innovative thinking stemming from TAM model and finds out critical factors from this theory which extended to understand the factors influencing mobile transaction application usage in telecommunication sector in Turkey. Besides, the findings of the research contribute to literature regarding adoption of new technologies.

So, the results of this research will contribute to the cumulative information for adoption of online transaction applications in telecommunication sector. The research shows that two factors which are perceived efficiency and perceived usability have an influence on usage of online transaction systems.

Especially, the research finds out a fundamental factor namely perceived efficiency that has effect positively on adoption of mobile transaction application. For customers of operators, this implication is same from the findings of many studies in the literature showing.

In the research about adoption of new technology, according to findings of many studies which are in the literature part, perceived usability is generally accepted in the research. However, in this study, perceived usability has effect negatively on actual usage of mobile transaction application. It may be explained as the research questions for perceived usability factor which consists various question types that are types of transaction amounts, compatibility and effect of social influences cause more complexity. So, customers may need more simplicity for a mobile application.

According to findings of many studies which are shown in the literature, perceived financial risk factor negatively explains generally for actual usage of a mobile application, especially in mobile banking applications. It was expected to find the effect of perceived financial risk on actual usage of transaction systems same as mobile banking. However, there was no significant result found in this study. Because of this, on the contrary of mobile banking applications, mobile transaction applications have less transaction types to lost money by mistake. Still future research can analyze this effect with bigger sample size.

In telecommunication sector in Turkey, there is no research about adoption of online transaction applications. So this study is expected to contribute to literature, telecom operators and mobile marketers.

5.2 MANAGERIAL IMPLICATIONS

Mobile application technology is still a new topic in Turkey. Although telecom operators in Turkey have started to use increasingly this technology in their investment on innovation especially on channel innovation as mobile transaction applications. The most attractive way to aware of the mobile transaction applications is to provide word of mouth development for usage of applications.

Recently, new technological developments should generate new trends in technology sector. These are transactions without any physical place or physical shopping. The future

of telecommunication sector may require mobile application not as a support channel but as a fundamental channel for the operators. Since the mobile penetration is increasing in Turkey, mobile application usage strategy looks to be suitable parallel the future habits of the customers.

With the help of wireless internet and mobile devices, future of telecom sector seems to be more attractive than today. Also social media usage via mobile applications will become the main player of mobile marketing in many sectors including telecom sector. It seems that the operators will have the tendency for social media marketing and as a transaction channel like mobile transaction applications.

5.3 LIMITATIONS

This research has some limitations. Firstly, demographic differences between survey respondents are not evaluated in the research model. Secondly, the current research is limited with a small sample size. Another limitation is the generalizability of the study's results. All participants of the survey are from Turkey so the findings may not be applicable to various nations. In addition, respondents of the survey can be more self-motivated than the other respondents given that they voluntarily participated in the survey, which may restrict the generalizability of our findings. Despite these limitations, the current study gives valuable insights relating with expressing the process in which users decide to use mobile applications.

5.4 FURTHER RESEARCH

In this research, the sampling frame was limited with Turkey. So, a further research would be in an international and multicultural context in order to discover the cultural differences among different countries on mobile transaction applications for mobile operator. As main part of the mobile transaction applications, easiness of using it seems to gain importance on the all transaction channels. Also wearable technology applications would be a further research topic for the researchers interested in mobile transactions. Two transaction services of operators that are internet and mobile application services have been the most significant channels for the technology sector. Instead of providing face to face branch

services, supplying electronic services lows the costs of operations. Besides, a new research on the mobile services and the mobile transaction applications would be conducted for telecom sector.

According to results of this study, perceived usability has a negative influence on actual usage of transaction systems. The reason can be that, users don't care lots of features of the applications. They can desire to make transaction for only what they need. In future studies, variable of simplicity and actual usage of online transaction systems can be researched.

REFERENCES

Books

Berg, S. 2006. *Sequential Estimation of the Mean in Finite Populations to Steiner's Most Frequent Value (2nd Ed.)*. Encyclopedia of statistical sciences; Vol. 12

Dyché, J. 2001. The CRM Handbook: *A Business Guide to Customer Relationship Management (1st Ed.)*. London, UK: Addison-Wesley Educational Publisher Inc.

Lury, C. (2011). *Consumer Culture. MPG Books Group Limited*. Second Edition. Great Britain. pp. 23-42.

Baptista G. and T. Oliveira (2015) *Understanding mobile banking: the unified theory of acceptance and use of technology combined with cultural moderators*, Computers in Human Behavior, 50, 418-430.

Harte, L. 2008. Introduction to Mobile Advertising – How to Setup, Create and Manage Ads for Mobile Telephones. Althos Publishing. pp. 1-32.

Pousttchi, K. & Wiedemann, D. G. (2007). "*Success Factors in Mobile Viral Marketing: A Multi-Case Study Approach*", Proceedings of the 6th International Conference on Mobile Business, Toronto, Ontario, Canada.

Journals

Ainin, S., Lim, C.H., Wee, A. (2005) *Prospects and Challenges of E-Banking in Malaysia*, Electronic Journal of Information Systems in Developing Countries, Vol. 22, no. 1.

Aktas, A. (2010): *Analysis of Mobile Marketing and Advertising Sector in Turkey*. Professional Compact Guide From An Insider Point of View. Grin Verlag.

Alcock, T.,Millard, N. (2006), "*Self-service — but is it good to talk*?" BT Technology Journal, Vol 24 No 1 (January) pg.70

Al-Somali S.A., Ghomali R., & Clegg B (2009). *An investigation into the acceptance of online banking in Saudi Arabia*. Technovation, 29(2),130-141. Doi:10.1016/j.technovation. 2008.07.004

Amin H., 2007. *Is the Technology Acceptance Model Valid for Bimb Mobile Banking? An Empirical Analysis.* International Journal Of E-Business Management · June 2007

Calisir, F. and C.A. Gumussoy (2008). *Internet Banking Versus Other Banking Channels: Young Consumers' View*. International Journal of Information Management, Vol. 28, No: 3, pp. 215-221.

Davis, F.D. (1989). *Perceived usefulness, perceived ease of use, and user acceptance of information technology*, MIS Quarterly. 13, 3, 319-340.

Dahlberg, T., Mallat, N., Ondrus, J., Zmijewska, A., 2008b. *Past, present and future of mobile payments research: a literature review*, Electronic Commerce Research and Applications 7 (2), 165–181.

Eriksson, K., & Nilsson, D. (2007). *Determinants of the continued use of self-service technology: The case of Internet banking*. Technovation, 27, 159–167.

Foon, Y.S., Fah, B.C.Y., 2011. I*nternet banking adoption in Kuala Lumpur: an application of UTAUT model*. Int. J. Bus. Manage. 6 (4), 161–167.

Gorry, G.,A., Westbrook, R.,A., 2010. "Once More with Feeling: Empathy, Technology and Customer Care." Business Horizons, 54: 125–134.

Guasong, S. (2007). *The Diffusion of Online Banking: Research Trends from 1998 to 2006*, Journal of Internet Banking & Commerce. 12.2, 1-13.

Gulbahar, M.O. and Yildirim, F. 2015. *Marketing efforts retailed to social media channels and mobile applications usage in Tourism: Case study in Istanbul*. 195, pp 453- 462.

Hanafizadeh P, Behboudi M, Koshksaray A.A.,Tabar M.J.S, 2014. *Mobile-banking adoption by Iranian bank clients*. Telematics and Informatics 31 (2014) 62–78

Hargittai, E. 2007. *Whose space? Differences among users and non-usersof social network sites*. Journal of Computer-Mediated Communication.13(1), 276–297.

Kaplan, A. M. 2012. *If you love something, let it go mobile:Mobile marketing and mobile social media 4x4*. Business Horizons, 55(2), 129-139.

Kaplan, A. M., & Haenlein, M. (2011a). *The early bird catches the. . .news: Nine things you should know about micro-blogging*. Business Horizons, 54(2), 105—113.

Keshtgary, M. ve Khajehpour, S. (2011). *Exploring and analysis of factors affecting mobile advertising adoption- an empirical investigation among Iranian users*. Canadian Journal on Computing in Mathematics, Natural Sciences, Engineering and Medicine, 2 (6): 144-151.

Kietzmann, J. H., Hermkens, K., McCarthy, I. P., & Silvestre, B. S. (2011). *Social media? Get serious! Understanding the func-tional building blocks of social media*. Business Horizons, 54(3), 241—251.

Kwon, S. J., Park, E., & Kim, K. J. (2014). *What drives successful social networking services? A comparative analysis of user acceptance of Facebook and Twitter*. The Social Science Journal, 1–11.

Laukkanen, T., Kiviniemi, V. (2010), *The role of information in mobile banking resistance*. International Journal of Bank Marketing, Vol. 28 Iss 5 pp. 372-388

Lee E.,J., Kyoung-Nan Kwon and David W. Schumann (2005), *Segmenting the non-adopter category in the diffusion of internet banking*. International Journal of Bank Marketing, Vol. 23 No. 5, pp. 414-437

Legris P., J. Ingham & P. Collerette.(2003). *Why do people use information 122 technology? A critical review of the technology acceptance model*. Information & Management, 40.3, 191-205.

Leong, L.-Y., Hew, T.-S., Tan, G. W.-H., & Ooi, K.-B. (2013). *Predicting the determinants of the NFC-enabled mobile credit card acceptance: a neural networks approach*. Expert Systems With Applications, 40(14), 5604e5620.

Luarn, P., Lin, H.H., 2005. *Toward an understanding of the behavioral intention to use mobile banking*. Comput. Hum. Behav. 21 (6), 873–891.

Mangold, W. G., & Faulds, D. J. (2009). *Social media: The new hybrid element of the promotion mix*. Business Horizons, 52(4), 357—365.

Mallat, N., M. Rossi & V. K. Tuunainen. (2004). *Mobile Banking Services*. Communications of the ACM. 47.5, 42-47.

Mallat, N. (2007). *Exploring consumer adoption of mobile payments e a qualitative study*. Journal of Strategic Information Systems, 16, 413e432.

Mao, E., & Srite, M.J. (2005). Thatcher, O. Yaprak, *A research model for mobile phone service behaviors: Empirical validation in the U.S. and Turkey*. Journal of Global Information Technology Management, 8(4), 7–28.

Merritt, C. (2011). *Mobile money transfer services: the next phase in the evolution of person-to-person payments*. Journal of Payments Strategy & Systems, 5(2), 143e160.

Meuter M. L., Amy L. O., Bitner M. J. & Roundtree R. I. (2003), "*The influence of technology anxiety on consumer use and experiences with self-service technologies*", Journal of Business Research, 56, pp.899– 906.

Oliveira, T. F., Thomas M., Popovic M.A., ˇ, A., 2014. E*xtending the understanding of mobile banking adoption: when UTAUT meets TTF and ITM*. Int. J. Inf.Manage. 34 (5), 689–703.

Oztas, Y.B.B. (2015) *'The Increasing Importance of Mobile Marketing in the Light of the Improvement of Mobile Phones, Confronted Problems Encountered in Practice, Solution Offers and Expectations'*, Procedia - Social and Behavioral Sciences,vol. 195, pp. 1066-1073.

Pura, M.(2005),"*Linking perceived value and loyalty in location-based mobile services*", Managing Service Quality: An International Journal, Vol. 15 Iss 6 pp. 509 – 538

Rao, B. and Minakakis, L., 2003. *Evolution of Mobile Location-based Service*. Commun. ACM. 2003, 46 (12): 61-65.

Riquelme, H. E., & Rios, R. E. (2010). *The moderating effect of gender in the adoption of mobile banking*. International Journal of Bank Marketing, 28(5), 328–341. http://dx.doi.org/10.1108/02652321011064872.

Riviari, J. (2005). *Mobile Banking: A Powerful New Marketing and CRM Tool for Financial Services Companies All Over Europe*. Journal of Financial Services Marketing. 10.1, 11-20.

Rohm, A., & Sultan, F. (2005). *Brand in the hand: An exploratory study of mobile marketing communications*. Paper presented at the European Academy of Management Conference. Germany: Munich

Sanganagouda, J., 2011. *USSD: A communication technology to potentially ouster SMS dependency.*

Sayar, C., Wolfe, S., (2007),"*Internet banking market performance: Turkey versus the UK*", International Journal of Bank Marketing, Vol. 25 Iss 3 pp. 122 – 141.

Scharl, A, Dickinger A. & Murphy, J. (2005). "*Diffusion and Success Factors of Mobile Marketing*", Electronic Commerce Research and Applications, Vol. 4, No. 2, pp. 159-173.

Shankar, Venkatesh and Edward C. Malthouse (2007), "*Moving Interactive Marketing Forward*," Journal of Interactive Marketing, 20 (1), 2–4.

Shankar, V., Venkatesh, A., Hofacker, C., & Naik, P. (2010).*Mobilemarketing in the retailing environment: Current insights and future research avenues*. Journal of Interactive Marketing, 24(2), 111–120.

Siddik, N.A. , Sun, G., Yanjuan, C. and Kabirah, S., 2014. *Financial Inclusion through Mobile Banking: A Case of Bangladesh*. Journal of Applied Finance & Banking, vol. 4, no. 6, 2014, 109-136

Sigar, K.O., Jared O.K. (2014). A critical look of USSD Technology Adoption and Benefits. In International Journal of Advanced Research in Computer Science. Vol 5, No. 1(2014)

Sultan, F., Rohm, A.J. & Gao, T.T. 2009. *Factors Influencing Consumer Acceptance of Mobile Marketing: A Two-Country Study of Youth Markets*. Journal of Interactive Marketing, 23: 308-320

Stafford, T. F., & Gillenson, M. L. (2003). *Mobile Commerce: What It Is and What It Could Be*. Association for Computing Machinery. Communications of the ACM, 46(12), 33.

Tiago, M. T. P. M. B., & Verı´ssimo, J. M. C. v. o. (2014). D*igital marketing and social media: Why bother?* Business Horizons, 57, 703-708.

Tosun O.K., Güngör A., and Topçu Y.I. (2008) A*NP Application for Evaluating Turkish Mobile Communication Operators*, Journal of Global Optimization, 42/2, 313-324. (SCI)

Tucker, C., Brick, J.M. & Meekins, B. (2007) *Household telephone service and usage patterns in the United States in 2004*: implications for telephone samples. Public Opinion Quarterly, 71, 1, pp. 3–22.

Usta, R. (2009): *Undergraduates" Attitudes Toward Mobile Advertising*. Dogus Üniversitesi Dergisi. Volume 10. No. 2. pp. 294-309.

Varnali, K. & Toker, A. (2010). *Mobile Marketing Research: The-state-of-the-art.* International Journal of Information Management, 30, 144-151.

Ververidis, C.,N., Polyzos, G.C. (2002) *Mobile marketing using a location based service*.Proc. First Internat. Conf. Mobile Business, Athens, Greece.

Vicente, P., Reis, E., Santos, R. (2009), *Using mobile phones for survey research A comparison with fixed phones,* International Journal of Market Research, 51, 5, pp. 613-633

Walker, Rhett H. and Lester W. Johnson (2006), "*Why consumers use and do not use technology-enabled services"*, Journal of Services Marketing 20/2 , pp.125–135

Wolcott, P., & Cagiltay, K. (2001). *Telecommunications, liberalization, and the growth of the Internet in Turkey*. Information Society, 17(2), 133.

Wu, J.H., Wang, S.C., 2005. *What drives mobile commerce? An empirical evaluation of the revised technology acceptance model.* Inf. Manage. 42 (5), 719–729.

Yuan, S. T. & Cheng, C. (2004). *"Ontology-Based Personalized Couple Clustering for Heterogeneous Product Recommendation in Mobile Marketing"*, Expert Systems with Applications, Vol. 26, No. 4, pp. 461-476.

Zhang, L., Zhu, J., & Liu, Q. (2012). *A meta-analysis of mobile commerce adoption and the moderating effect of culture.* Computers in Human Behavior, 28(5), 1902–1911. http://dx.doi.org/10.1016/j.chb.2012.05.008.

Zhou, T., Lu, Y., Wang, B., 2010. *Integrating TTF and UTAUT to explain mobile banking user adoption*. Comput. Hum. Behav. 26 (4), 760–767.

Zhu, Y. Q., & Chen, H. G. (2015). *Social media and human need satisfaction: Implications for social media marketing*. Business Horizons.

Other Publications

Breune, J. 2007. *Online Banking Report*. Mobile Banking and Payments. 138/139.

Al-Jabri I.M., 2015. *The intention to use mobile banking: Further evidence from Saudi Arabia*. S.Afr.J.Bus.Manage.2015,46(1)

Cakici S. 2008 *Adoption of Mobile Banking Services in Turkey*. Masters thesis, University of Marmara.

Davis, F.D. 1986, *A technology acceptance model for empirically testing new end-user information systems: Theory and results*, Massachusetts Institute of Technology, 1986.

Demirel, K. 2011. *Consumer Attitudes Regarding Mobile Advertising in Turkey*, Master Thesis, 2011.

Fui, C.K. (2008) *Self-service technology and internet banking: An investigation of consumer's trial decision*. Masters thesis, University of Malaya.

Howard, B. (2003). *Go Mobile: Marketing Takes to the Wireless Web*, Target Marketingmag.com, Vol. 26, No. 12, pp. 33-72.

Kohen, A. (2006). *Çağrı Merkezleri, Yararları ve Bileşenleri*. www.tekadres.com/tekadres/content/mm4_sm3_14.htm, (May 1st, 2006)

Lin, H.-F. (2012). *Determining the relative importance of mobile banking quality factors*. Computer Standards & Interfaces, 35(2), 195–204. http://dx.doi.org/10.1016/j.csi.2012.07.003.

Liu, S. (2012). *Technology Acceptance Model for Determining the Effects of Age, Usability, and Content on Mobile Application Usage*.[online]Electronic Thesis or Dissertation. https://etd.ohiolink.edu/

Meer, G. V. (2006) *Customer development and retention on a Web-banking site*. 20 (1), 58-64.

Mulaomerovic E., T. C.V.,2013. The Role Of Cultural Dimensions In The Acceptance Of Retail Innovations. Management, Knowledge and Learning International Conference 2013

Nurdilek D., Avunduk C.A. 2012. "*Mobile payment systems in Turkey*," MPRA Paper 41676, University Library of Munich, Germany.

Plant, S., (2006), "*On the Mobile: The Effects of Mobile Telephones on Social and Individual Life*," [online]www.motorola.com/mot/dod/0/234_MotDoc.pdf, accessed October 20, 2006.

Richtel, M., (2006),"*Marketers Interested in Small Screen*,"The New York Times,January 16, available at http://www.nytimes.com/2006/01/16/technology/16mobile.html?_r=1&scp=60&sq=richtel%202006&st,accessed April 1, 2009.

Suoranta, M., 2003.*The Adoption of Mobile Banking in Finland.*

Taskin, E., *GSM MSC/VLR Unstructured Supplementary Service Data (USSD) Service*. 2012, Uppsala University.

APPENDICES

APPENDIX-1, Survey Questions

Aşağıdaki faaliyetler için Online İşlemler Uygulamasını ne sıklıkla kullanırsınız?					
	Hiçbir Zaman	Nadiren	Bazen	Sıklıkla	Her Zaman
Fatura Ödeme					
Tarife Değiştirme					
Lira/Bakiye Yükleme					
Kalan Kullanımları Kontrol Etme					
Paket Satın Alma					
Şikayette Bulunma					
Bakiye Kontrol Etme					

Aşağıdaki ifadelere katılım düzeyinizi ölçek üzerinden değerlendiriniz.					
	Kesinlikle Katılmıyorum	Katılmıyorum	Ne Katılıyorum Ne Katılmıyorum	Katılıyorum	Kesinlikle Katılıyorum
Online İşlemler Uygulaması hattımı en iyi şekilde kullanmamı sağlar.					
Online İşlemler Uygulaması fatura ödeme ve diğer işlemleri daha çabuk gerçekleştirmemi sağlar.					
Online İşlemler Uygulaması kullandığımda zaman kazanırım.					
Online İşlemler Uygulamasını kullanmak operatörümle olan işlemlerimi daha kolay yönetmemi sağlar.					
Online İşlemler Uygulamasını kullanmak operatörümle olan işlemlerimin daha hızlı sonuçlanmasını sağlar.					
Online İşlemler Uygulamasını kullanmak operatörümle iletişime geçmenin en uygun yoludur.					
Online İşlemler Uygulamasını kullanmak hattımı kontrol etmek adına faydalıdır.					

Online İşlemler Uygulamasını kullanmak işlemlerimi online olarak yapma konusunda beni geliştirebilir.					
Online İşlemler Uygulamasını kullanmayı öğrenmek kolaydır.					
Online İşlemler Uygulamasını kullanmak için çok fazla zihinsel çaba gerekmez.					
Online işlemler Uygulamasını tüm özellikleriyle kullanmanın basit olduğunu düşünüyorum.					
Online İşlemler Uygulaması ile istediğim işlemi kolay bulabilirim.					
Online İşlemler Uygulamasını kullanmak güvenlidir.					
Online işlemler Uygulanmasının kişisel bilgilerimi koruması bakımından güvenirim.					
Online işlemler Uygulamasının güvenliği konusunda endişeli değilim.					
Online İşlemler Uygulaması benim yaşam stilime/alışkanlıklarıma uygundur.					
Online İşlemler Uygulamasını kullanmak aboneliğimi yönetmek istediğim şekle tam anlamıyla uyar.					
Cep telefonum Online İşlemler Uygulamasını kullanmak için yeterince uygundur.					
Operatörüme Online İşlemler Uygulamasının güvenliğini sağlaması konusunda güvenebilirim.					
Cep telefonumun üreticisine aldığım cihazın Online İşlemler Uygulamasını kullanmam için uygun olması konusunda güvenebilirim.					
Operatörüme Online İşlemler Uygulamasına güvenli bir bağlantı sağlaması konusunda güvenebilirim.					
Tanıdıklarım Online İşlemler Uygulamasını denememi önerdiğinde,					

uygulamayı kullanmayı düşünebilirim.					
Yeni teknolojileri denediğimde, kendi deneyimlerime başkalarının tavsiyelerinden daha çok güvenirim.					
Fikirlerine önem verdiğim insanlar Online İşlemler Uygulamasını kullanmaya başlamam veya kullanmaya devam etmem gerektiğini düşünür.					
Online İşlemler Uygulamasını kullanırım çünkü insanların çoğu kullanıyor.					
Online İşlemler Uygulamasını kullanmak fatura maliyetine neden olabilir.					
Online İşlemler Uygulamasını kullanmak internet erişim maliyetine sebep olabilir.					
Online İşlemler Uygulamasını kullanmak için finansal limitler bulunmaktadır.					
Online İşlemler Uygulamasını kullanırken endişe hissederim.					
Online İşlemler Uygulamasını kullanırken hata yapıp düzeltemeyeceğim diye kaygılanırım.					
Online İşlemler Uygulamasında parasal işlemler yapmak potansiyel bir risk barındırır.					
Online uygulamaları kullanırken başkalarının bilgilerime erişebilmesi konusunda endişe duyarım.					