

An Empirical Study on the Effects of Service Innovations in Marketing of Turkish GSM Mobile Operators on the Intention of Consumers to Re-Purchase the Same GSM Operator

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Abstract

The aim of the study is to investigate the effects of innovation of the mobile operator's services on the levels of adoption of consumers to these services and therefore to re-purchase the same operator services. The assumption of the study is that intention to re-purchase, that is based on characteristics of perceived innovation and affected by service innovation, depends on consumer attitudes. According to the developed model of the study within the aim and the assumption of the study all of 10 specified hypotheses were analyzed by Pearson's correlation coefficient and considered at $p = 0.01$ level of significance. Factor analysis was used to determine the factors, that impact on intentions of consumers to re-purchase innovations in mobile marketing services. As a result of factor analysis, nine factors were determined to be effective on the intentions of consumers to re-purchase innovations in mobile marketing services. They are Trying Ability, Perceived Risk, Attitude, Relative Advantage, Compatibility, Trust, Complexity and Observability.

Keywords: Mobile Marketing, Service Innovation, Attitude, Smart Phone, Telecommunications.

Introduction

The mobile marketing is estimated to grow three years three-fold in Turkey. The market with 150 Million TL in 2015 is expected to rise to 450 Million TL. There are still three operators in mobile communications market of our country. They are Turkcell, Vodafone and Avea. When data of annual investment of these three operators is analyzed for 2009; about effect of 3G also, this year has the biggest investment each other with 4.589 Million TL. And in 2010; Vodafone is the leader investor with 1.403 Million TL, Avea is the second with 839 Million TL and Turkcell is on the third attempt with 779 Million TL.

There were 61.7 million of mobile subscribers by March 2011. The beginning of service delivery in 3G in July 2009 the number of 3G subscribers reached 4.21 million by March 2011. The number of subscribers to mobile internet service with the 3G increased to 1,862,888 in the first quarter of 2011, while in the last quarter of 2010 it was just 1,448,020. During this time, using to mobile internet usage has succeeded to 5.460 TByte. According to the number of subscribers Turkcell, Vodafone and Avea have a market share of %53.55, %27.29 and %19.15 respectively (BTİK, 2011).

Mobile marketing has an increasing trend all over the world. Turkey shares leadership in the field of mobile marketing with such markets as USA, Japan and United Kingdom very successfully. Location based services; the NFC and other similar technologies introduced in mobile marketing and growing smart device market accelerate the development of mobile marketing. Considering the case of the device there are 1.5 million Blackberry and 650 thousand iPhone, and these devices creates 55% of mobile internet traffic. Mobile marketing applications are listed as:

- SMS (Short Message Service) Campaigns
 - Text&Win – Lottery applied
 - Recharge - Talk time campaigns
 - SMS services – Write “Hurriyet” take it in your cell phone
- MMS (Multimedia Messaging Service)

- LBS (Location Based Services)
 - GPS (Global Positioning System): “Compass” of Turkcell and "what's around me?" of Vodafone are iPhone applications
- WAP / Mobile Internet Software and Site Construction
- The iPhone and other smart phone applications
- Mobile couponing, mobile games, mobile payment, mobile tagging applications.

However in 2011, touch-screens and rich media models of smart phones in combination with location-targeted started to be used and mobile marketing means much more than just SMS (www.computerworld.com.tr/uzmanlara-gore-turkiye-mobil-pazarlama-uncusu-detay6330.html, 2011). Service innovations, such as Permitted database applications, location based services, the TL/minute campaigns, TonlaKazan and other similar products and applications in the field of mobile marketing applications may affect the consumers' perception towards mobile marketing applications and the re-purchase intentions. Therefore in the following section service innovations concerning the literature would be reviewed and hypotheses would be developed.

The Literature Review and Hypothesis Development of Service Innovation

In 1968 when V. R. Fuchs developed the concept of "service economy" increasing importance of services had been said. Later, an American scientist in the field of management, Daniel Bell (1974), has emerged "post-industrial society theory". This theory is indirectly explained as follows: at different times and in different sectors the service should be innovative to adapt to the changing business environment. Especially, the services in service sector (Bell, 1974: 13). Due to the competition, innovation and changes constantly need to be done in the mobile telecommunications sector as in all typical service enterprises. Especially corresponds to the homogenization with communication products along with the loss of customer service innovations can be a powerful competitive tool. Service innovations play a significant role encouraging existing customers to re-purchase the same operator services.

Customer service is a process that cannot be seen and easily consumed. Customer service includes a transfer system produced in the process of service. Service that is consumed immediately as produced. Since the American Marketing Association (AMA) proposed definition of service in 1960, scientists working in various areas for different research purposes have demonstrated their own service definitions. With the extension of the study area related to the services, concept of service has always been described as a broad. Service includes an invisible process of interaction between consumers and businesses as well as products, technological systems and other physical resources that are involved in this process at the same time.

Service innovations provided by the operators of telecommunications industry with the participation of consumers include some of the developments in the process that cannot be seen and can easily disappear. These developments include improvements in the distribution system of transferred services. This approach consists of two dimensions: innovation in the distribution system and innovation of consumer interface. Innovations of consumer interface are all developments in the interface between telecommunication service providers and consumers. These include the staff innovations in methods of serving, innovations around the network, etc. Innovation in service distribution system includes all the innovations presented during the invisible process and customer experience provided by telecommunications companies. This innovation involves both the positive effects on staff resulting from changing management or the organization and positive changes that took place in commercial organization itself.

Mobile telecommunications companies are typically a service industry. Mobile telecommunications service is an indispensable part of people's daily lives. If the luxury needs compare with ordinary needs, the consumers are sensitive for either cost and quality nor consuming process. Therefore, increased personal needs of consumers with the increased importance of the service process should bring up service innovations of operators that offer mobile telecommunications services to satisfy the growing needs of the people. Consumer's perception on service innovations of certain operators considering that the company reforms are allowed to meet the demands of consumers will refer to the valuation of a positive image for the company. Thus, the potential for the telecommunications operator will develop a positive feeling.

For example, a better service, improved employee attitudes and the increasing professionalism will help consumers in choosing the most appropriate communication enterprises of other companies. Thus, communication performance of consumers will be increased (Ke-Yi and Lin-Lin, 2010:191-194). Therefore, the relationship between service innovations and the process of innovation adoption developed following hypotheses:

- H1: Innovation of mobile marketing service has a positive effect on the adoption process.
- H1a: Innovation of mobile marketing service has a positive effect on the perceived level of relative advantage.
- H1b: Innovation of mobile marketing service has a positive effect on the perceived level of compatibility.
- H1c: Innovation of mobile marketing service has a positive effect on the perceived level of complexity.
- H1d: Innovation of mobile marketing service has a positive effect on the perceived level of trying ability.
- H1e: Innovation of mobile marketing service has a positive effect on the perceived level of observability.
- H1f: Innovation of mobile marketing service has a positive effect on the perceived level of confidence.
- H1g: Innovation of mobile marketing service has a positive effect on the perceived level of risk.
- H1h: Innovation of mobile marketing service has a positive effect on the perceived level of allowed suggestibility.

According to Rogers (2003) there are five perceived innovation property. These characteristics can be used to create a positive or a negative attitude to innovation. These features can be expressed as relative advantage, compatibility, complexity, and observability as trying ability (Rogers, 2003:222). Contemporary research on mobile services had not used all of the perceived characteristics of innovation. Tornatzky and Klien in 1982 used some these characteristics as relative dominance, compatibility and complexity on their studies about of consumer's adoption (Tornatzky and Klien 1982:28). Moore and Benbasat claimed that in 1991 in their study, Rogers (1983) defined observable concept is complex and they claimed it can reach to the others which of the result of innovation. Therefore, property of observability had stated as visibility in their study (Moore and Benbasat, 1991:173). In this sense, in mobile marketing applications the level of perception of five properties of innovation can affect the consumers' attitudes towards mobile marketing services. Thus, the consumers' attitudes toward mobile marketing services will grow up depending on the level of perception of these five properties of innovation.

The relationship between characteristics of innovation and attitudes can be expressed by the following hypotheses:

- H2: The level of perceived relative dominance of innovation has a positive effect on the consumer's attitudes towards service innovations.
- H3: The level of perceived compatibility of innovation has a positive effect on the consumer's attitudes towards service innovations.
- H4: The levels of perceived complexity of innovation have a positive effect on the consumer's attitudes towards service innovations.
- H5: The levels of perceived trying ability of innovation have a positive effect on the consumer's attitudes towards service innovations.
- H6: The levels of perceived observability of innovation have a positive effect on the consumer's attitudes towards service innovations.

Another area which can contribute to understand the adoption of mobile marketing services is confidence. According to Siau and Shen (2003), confidence is one of the major reasons affecting people to give their own personal data to the electronic environment of service provider (Siau and Shen, 2003:92). This view was supported by Leppäniemi, Sinisalo and Karjaluo(2006). According to Leppäniemi, Sinisalo and Karjaluo(2006), the experimental research is needed to determine the factors affecting the willingness of the consumers to provide personal information and allow using this information (2006) (Leppäniemi, Sinisalo and Karjaluo, 2006:2). In this sense, confidence of the consumers may affect levels of using mobile marketing services.

Therefore, the relationship between the perceived level of confidence in innovation of mobile marketing service and the consumer's attitudes towards mobile marketing services can be expressed by following hypothesis:

- H7: The levels of perceived confidence of innovation have a positive effect on the consumer's attitudes towards service innovations.

According to Mitchell (1999), perceived risk is essential premise in making trust effective. Therefore, in order to create trust he perceived risk need to be reduced. Furthermore perceived risk is also necessary for the intention of the decision adoption (Mitchell, 1999:163). For this reason, the perceived risk also affects the consumers' attitudes towards mobile marketing services.

Hence, the relationship between the consumer's attitudes towards mobile marketing services and the level of perceived risk of innovation of mobile marketing services can be expressed by the following hypothesis:

H8: The levels of perceived risk of innovation have a positive effect on the consumer's attitudes towards service innovations.

Allowed suggestibility means to allow marketers to bring the expected marketing message which is related to the consumers themselves. According to Godin (1999)'a, authorized marketing is an approach that offers the consumer the opportunity to volunteer marketing. In this sense, the level of permitted suggestibility in mobile marketing services may affect consumers' attitudes towards mobile marketing services (Godin, 1999).

Hence the relationship between consumer's attitudes towards mobile marketing services and the level of perceived permitted suggestibility of innovation of mobile marketing services can be expressed by the following hypothesis:

H9: The levels of perceived permitted suggestibility of innovation have a positive effect on the consumer's attitudes towards service innovations.

Theory of Reasoned Action means shaping behavioral intentions of consumer attitudes (Sheppard, Hartwick and Warshaw, 1988). According to this theory, attitudes are the result of the formation of behavior oriented specific intentions (Mowen and Minor, 2003). According to Ajzen and Fishbein (1980), a person's beliefs represent the person's knowledge about the world and person's behavior is determined by this information.

In this sense, social factors, personal norms, and perceived social oppression determine whether to accept mobile marketing services through mobile phones or not (Ajzen and Fishbein, 1980). Therefore, characteristics of perceived innovation, that are affected by innovation in the service, can be considered as helping factors in the design of consumers beliefs, attitudes and intentions towards mobile marketing services.

Therefore, the relationship between consumers' attitudes for mobile marketing service innovations and intention to re-purchase the novelty of the service can be expressed by the following hypothesis:

H10: Consumers' attitudes on service innovations have a positive effect on intention to repurchase service innovation.

Method

The aim of the study is to investigate the effects on the level of consumers' adoption to the innovations of the services that are provided by mobile operators, and therefore, intentions to re-purchase the same operator services. The study covers major mass of individuals residing in the center and the province of Corum. There are 243,600 people living in the center of the province of Corum. 123,136 of them (51%) are women and 120,464 (49%) are man. According to the estimated method, the sample size of the study can be expressed as $n = N(pq)Z^2 / (N-1)E^2 + (pq)Z^2 = 399$ through the level of the error and confidence level , 0.05 and 95% respectively. Considering that questionnaires may partly be incorrect, the 414 valid questionnaires of applied 500 surveys were evaluated. Questionnaires were implemented to individuals up to 18.

The data used in this study were obtained using the questionnaires and interviews techniques. During the implementation of surveys, participants were informed on innovations in the mobile marketing service in the form of questionnaires and oral interviews, and determined that they were familiar with these issues. During the process of questionnaire preparation, concepts of service innovation, relative advantage, compatibility, complexity, trying ability, observability, confidence, perceived risk, allowed suggestibility, attitudes and intention to re-purchase were taken into account. In order to investigate the effects on the level of consumers' adoption to the innovations of the services, which are provided by mobile operators, and therefore, intentions to re-purchase the same operator services, the questionnaire, that was used to achieve the primary data in this study, consists of 3 parts.

The first part consists of five multiple-choice questions for evaluating the level of participant's information on mobile market and innovation of mobile marketing services. The second part consists of 41 expressions which are based on changing with “Strongly Disagree” and “Strongly Agree”. We used fivefold likert criteria in this section. We aimed to explain of consumers’ opinions about mobile marketing service innovation. Determining of these statements mainly benefited from studies of Ke-Yi Lin and Lin 2010, Moore and Benbasat 1991, Siau and Shen 2003, Ajzen and Fishbein 1980 and Leppäniemi, Sinisalo and Karjaluoto(2006) The third part consists of multiple choice questions to determine demographic characteristics such as age, gender, income, education, and occupation of the participant.

In order to determine the existence of a correlation between elements of the questionnaire assessed by Likert scale and gathered of 3 sections and 51 sub-titles, the alpha coefficient (Cronbach's Alpha) was used. As a result of analysis, the coefficient of alpha value must be more than 60% in order to say that the scale is reliable (Nakip, 2006). In this regard reliability analysis of the scale, which was used in this study, was carried out and related coefficient calculated as 0.88. According to this result, the questionnaire can be considered to be reliable.

Model of the Study

The aim of the study is to investigate the effects on the level of consumers’ adoption to the innovations of the services that are provided by mobile operators, and therefore, intentions to re-purchase the same operator services. The assumption of the study is that intention to re-purchase, that is based on characteristics of perceived innovation and affected by service innovation, depends on consumer attitudes. Model of the study, based on the aim and on the assumption of the study and after reviewing the literatures, is as follows:

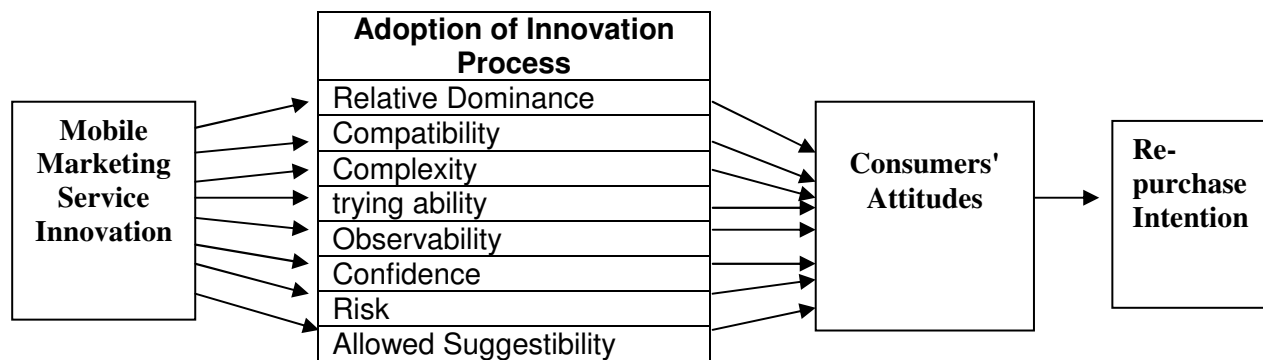


Figure 1: Conceptual Model on the Relationship between Mobile Marketing Service Innovation and Consumers’ Re-Purchase Intention.

When analyzing Figure 1, effect of mobile marketing service innovation on adoption process of consumer to innovation is observed. The process of innovation adoption affects the consumer attitudes and intentions of consumers to repurchase mobile marketing service innovations.

Data Analysis and Results

The raw data obtained from the survey technique was evaluated with the SPSS 16.0 package program. Descriptive statistics, showing the percentages and frequencies, were used to analyze the data. Hypotheses, developed in accordance with Model of the study, were tested with Pearson's correlation analysis. Factor analysis was used to determine the factors that are effective on intentions of consumers to repurchase mobile marketing service innovations. Results of the analysis are presented in detail in the following sections.

Descriptive Statistics Related to the Model of the study

In Table 1, distributions of frequency and percentage measures of descriptive statistics about demographic variables of surveyed respondents are given below:

Table 1: Demographic Characteristics of Participants

Gender	n	%	Income	n	%
Female	187	45.2	Less Than 100.00TL	32	7.7
Male	227	54.8	100.00-499.99 TL	115	27.8
Total	414	100.0	500.00-999.99 TL	87	21.0
Age	n	%	1000.00-1.499.99 TL	88	21.3
18-25	198	47.8	1500.00 + TL	92	22.2
26-35	164	39.6	Total	414	100.0
36-45	27	6.5	Occupation	n	%
46-55	18	4.3	Student	119	28.7
56+	7	1.7	Civil Servant	97	23.4
Total	414	100.0	Self-Employment	70	16.9
Education	n	%	Private Sector Worker	31	7.5
Primary School	26	6.3	Health Officer	8	1.9
Secondary School	10	2.4	Housewife	27	6.5
High School	99	23.9	Worker	16	3.9
College	41	9.9	Sergeant	1	0.2
Undergraduate	237	57.2	Teacher	13	3.1
Ma	-	-	Retired	8	1.9
PhD	1	0.2	Driver	2	0.5
Total	414	100.0	Not Working	22	5.3
			Total	414	100.0

When Table 1 is analyzed, female and male of surveyed are 45% and 55%, respectively and 87% of them under the age of 36 and 44% have income over than 1000.00 TL. The participants graduated at least from high schools and universities, 24% and 57% respectively. If the occupation groups analyses, we can see %29 of group are students, %23 are civil servant, %24 are private sector workers and %25 are the other occupation groups. In Table 2, percentage and frequency values are used according to participants' levels of use of the mobile operator and mobile devices.

Table 2: Participants' Levels of use of the Mobile Operator and Mobile Device

Which GSM Operator do you use?	n	%	Which mobile device are you using most in your daily life?	n	%
Turkcell	93	22.5	Smartphone	272	65.7
Vodafone	104	25.1	Mobile Phone	35	8.5
Avea	94	22.7	Laptop	71	17.1
Turkcell + Avea	28	6.8	Tablet PC	14	3.4
Turkcell + Vodafone	23	5.6	GPS	10	2.4
Vodafone + Avea	70	16.9	PDA	12	2.9
Turkcell + Avea+ Vodafone	2	0.5	Total	414	100.0
Total	414	100.0			
Which specification and generation of mobile phones do you have?	n	%			
2G	129	31.2			
3G	285	68.9			
Total	414	100.0			

When Table 2 is analyzed, the subscribers of Vodafone, Turkcell and Avea are 25%, 23%, 23% of the respondents, respectively. Colorful, multimedia-enabled mobile phone with usage of video-conversation technology are being used by 69% of the participants, and 66% of them are using smart phones in their daily life. In Table 3, percentage and frequency values are used according to participants' reasons for purchasing and levels of use of mobile marketing service innovations.

Table 3: Participants' Reasons for Purchasing and Levels of use of Mobile Marketing Service Innovations

Which one Multi-Service Mobile Marketing Innovations are you using most?	n	%	Please specify the reason of Purchasing Mobile Marketing Service innovations.	n	%
Mobile Payment	67	16.2	Enjoyable	55	13.3
Turkcell "Compass"	38	9.2	Increases my Communication Quality	91	22.0
Vodafone "what's around me?"	26	6.3	Makes my daily life easier	161	38.9
Avea "Mobile Vision"	18	4.3	Its why that my roundabout people using that	15	3.6
Mobile Games	143	34.5	Easy to Use	50	12.1
SMS Campaigns	108	26.1	do not use	42	10.1
Mobile Internet	3	0.7	Total	414	100.0
Mobile Coupons	11	2.7			
Total	414	100.0			

When Table 3 has analyzed, among the reasons participants purchasing mobile marketing service innovations the first three are 'Makes my daily life easier' with 39%, 'Increases my Communication Quality' with 22% and 'enjoyable' with 13%. Mobile gaming's with 35%, SMS campaigns with 26% and mobile payment with 16% are first three most preferred mobile marketing service innovations. Among the participants Turkcell "Compass" (9%), Vodafone "what's around me?" (% 6) and Avea "Mobile Vision" (% 4) are more preferred of mobile marketing service innovations. The results of Factor analysis on the identification of factors, that are effective on the intentions of consumers to repurchase the mobile marketing service innovations, will be located in the following section.

Descriptive Statistics Related to the Factors Which Affect Intention of Consumers Re-Purchase Mobile Marketing Service Innovations

In this section there is evaluation of reliability and factor analyses about factors of effectiveness which ones are re-purchasing to mobile marketing service innovations for the questionnaire subjects. Reliability analyze is, the consistency of a set of measurements or of a measuring instrument, often used to describe a test. Reliability is inversely related to random error. In this context, firstly the reliability of the variables on the basis of factor was investigated, and then the reliability of whole scale was tested. During the analysis phase, Alfa coefficient (Cronbach's alpha) and Q-All Correlation (Item-Total Correlation) were used in determining variables that do not represent common value that required being measured (Baş, 2006).

The effective factors of re-purchasing mobile marketing service innovations are taking placed Figure 1. These factors are stated in our studies model Figure1. Average of scale and standard deviation of 36 questions, that make up the lower scale of these factors and 35 questions determined to share a common value were calculated as 1.2453E2 and 22.28340, respectively. Grand mean and the average variance of questions are 3.5581 and 1,323, respectively.

The average change interval and the range of variance change of 35 questions were obtained as 0,761 and 0,635, respectively. Likewise, while the grand mean of Inter-Item correlations between questions were 0,286, minimum correlation and maximum correlation among questions were calculated as 0,089 and 0, 645, respectively. To avoid breaking of the property of additively of the scale, correlation coefficients among the whole question must not be negative and should be larger than 0.25. Item-total correlations were obtained in high values ranging between 0,424 and 0,607. The factors affecting on the intentions of consumers to re-purchase mobile marketing service innovations and the factors of process of adoption to the innovation, based on the model of the study, were determined to be related with the attitudes of the consumers. Reliability factors are determined as; Trying Ability 81.9%, Perceived Risk 74.6%, Attitude 74.0%, Relatively Dominance 84.7%, Allowed Suggestibility 70.0%, Compliance 69.4%, Confidence 77.3%, Complexity 77.8% and Observability 72.9%, respectively.

Overall reliability coefficient Alpha, which was calculated for the scale, is 0,933. It is high value and represents that the used scale is reliable (Kayış, 2008).

Following the construction of the reliability analysis, Factor analysis was used in order to verify structure of the factor that affects consumers' intentions to repurchase mobile marketing service innovations quantitatively. Appropriateness of Factor analysis is defined by the measure of sampling adequacy, KMO (Kaiser-Meyer-Olkin). This measure is a test, which shows the validity of Factor analysis from the very beginning. This test is a test used to measure the adequacy of sampling and is concerned with the sample size as well. This test's is explained small because The Kaiser-Meyer-Olkin measure of sampling adequacy tests whether the partial correlations among variables are small. Bartlett's test of sphericity tests whether the correlation matrix is an identity matrix, which would indicate that the factor model is inappropriate. In this case, it is not correct to continue factor analysis. KMO is highly desirable to be over 60% as a ratio (Nakip, 2006). In this study, the value of KMO was found to be 81.2%. Measure of sampling adequacy, KMO, to be over 60% shows that variables, located on the scale, are appropriate to factor analysis. The results of factor analysis are showed on Table 4:

Table 4: Factors Affecting on the Intentions of Consumers to Re-Purchase Mobile Marketing Service Innovations

	Factor 1 Trying ability $\alpha = 0.82$	Factor 2 Perceived Risk $\alpha = 0.75$	Factor 3 Attitude $\alpha = 0.74$	Factor 4 Relatively Dominan ce $\alpha =$ 0.85	Factor 5 Allowed Suggestibili ty $\alpha = 0.70$	Factor 6 Compatibility $\alpha = 0.69$	Factor 7 Confidenc e $\alpha = 0.77$	Factor 8 Comple xity $\alpha = 0.78$	Factor 9 Observabili ty $\alpha = 0.73$
q.5.22	<u>0.815</u>								
q.5.24	<u>0.737</u>								
q.5.23	<u>0.710</u>								
q.5.35		<u>0.802</u>							
q.5.36		<u>0.708</u>							
q.5.38		<u>0.658</u>							
q.5.37		<u>0.562</u>							
q.5.8			<u>0.787</u>						
q.5.4			<u>0.653</u>						
q.5.3			<u>0.608</u>						
q.5.5			<u>0.475</u>						
q.5.7			<u>0.466</u>						
q.5.13				<u>0.776</u>					
q.5.14				<u>0.697</u>					
q.5.15				<u>0.692</u>					
q.5.12				<u>0.671</u>					
q.5.9				<u>0.651</u>					
q.5.11				<u>0.532</u>					
q.5.10				<u>0.344</u>					
q.5.27					<u>0.769</u>				
q.5.29					<u>0.700</u>				
q.5.28					<u>0.665</u>				
q.5.30					<u>0.648</u>				
q.5.19						<u>0.754</u>			
q.5.21						<u>0.743</u>			
q.5.20						<u>0.455</u>			
q.5.33							<u>0.736</u>		
q.5.32							<u>0.640</u>		
q.5.34							<u>0.640</u>		
q.5.31							<u>0.596</u>		
q.5.18								<u>0.594</u>	
q.5.16								<u>0.590</u>	
q.5.17								<u>0.509</u>	
q.5.26									<u>0.537</u>
q.5.25									<u>0.457</u>
Kaiser-Meyer-Olkin Sampling Adequacy			<u>0.812</u>						
Bartlett's Test			$\chi^2 = 2.554E3$ sd= 595 p= 0.000						

Factor analysis, was carried out using principle component analysis and varimax vertical rotation technique. During the reduction of factors with the help of principle component analysis factor loadings of variables that are fewer than 34% have been eliminated. Moreover, in order to look at the suitability of variables that are subjected to factor analysis, to the normal distribution skewness and kurtosis values had been revised. The value varies between approximately -1 and +1 and data were determined to be normally distributed.

At the end of analyze we tested the 9 factor with internal reliability and see that the eigenvalues of the factors are over 1. The factors effecting on the intentions of consumers to re-purchase mobile marketing service innovations defined as elements of consumer attitudes and process of adoption to innovation. Factor 1 which is Trying ability, Factor 2 which is Perceived Risk, Factor 3 which is Attitude, Factor 4 which is Relative Dominance, Factor 5 which is Allowed suggestibility, Factor 6 which is Compatibility, Factor 7 which is Confidence, Factor 8 which is Complexity and Factor 9 which is Observability explain the total variance in 32.2%, 9.0%, 6.4%, 4.6%, 4.0%, 3.8% 3.4%, 3.2% and 2.9%, respectively. Therefore, these nine factors can be said to be respectively effective on the intentions of consumers to re-purchase mobile marketing service innovations.

Among all factors the most effective and that one, which describes approximately 32% of the total variance, is Trying Ability. So, being capable in experimental of Mobile marketing service innovations can be said to have positive effects on the adoption of consumers to these types of services and, therefore, will influence their intentions to repurchase. The following section includes developed hypothesis analyzes in accordance with the model of study.

Testing to Hypothesis

The aim of the study to determine the factors those are effective on intentions of consumers to repurchase mobile marketing service innovations. According to the developed model of the study; service innovation is exposing to consumers' to innovation firstly. In consequence, it is making to consumers' to re-purchasing. In accordance with the aim and the assumption of the study 10 developed hypotheses were analyzed by Pearson's correlation coefficient. Pearson's correlation coefficient is used to measure the degree of linear relationship between two constant variables (Sungur, 2008:116). Hypothesis developed according to the model of the study has been developed by taking into consideration the linear relationship between the service innovations and re-purchase

Table 5: Hypothesis Test Results

Correlations^a

H1a: Innovation of mobile marketing service has a positive effect on the perceived level of relative advantage.	q5.2	q5.9	q5.10	q5.11	q5.12	q5.13	q5.14	q5.15
q5.2 Pearson Correlation	1	,224**	,282**	,299**	,195**	,222**	,244**	,126*
Sig. (2-tailed)		,000	,000	,000	,000	,000	,000	,010

** . Correlation is significant at the 0.01 level (2-tailed).

intention. The results of analysis are observed in the following tables:

* . Correlation is significant at the 0.05 level (2-tailed).

a. List wise N=414

Table 6: Hypothesis Test Results **Correlations^a**

H1b: Innovation of mobile marketing service has a positive effect on the perceived level of compatibility.	q5.2	q5.19	q5.20	q5.21
q5.2 Pearson Correlation	1	,349**	,437**	,400**
Sig. (2-tailed)		,000	,000	,000

** . Correlation is significant at the 0.01 level (2-tailed).

a. List wise N=414

Table 7: Hypothesis Test Results **Correlations^a**

H1c: Innovation of mobile marketing service has a positive effect on the perceived level of complexity.	q5.2	q5.16	q5.17	q5.18
q5.2 Pearson Correlation	1	,226**	,297**	,289**
Sig. (2-tailed)		,000	,000	,000

** . Correlation is significant at the 0.01 level (2-tailed).

a. List wise N=414

Table 8: Hypothesis Test Results **Correlations^a**

H1d: Innovation of mobile marketing service has a positive effect on the perceived level of experimentable	q5.2	q5.22	q5.23	q5.24
q5.2 Pearson Correlation	1	,224**	,170**	,176**
Sig. (2-tailed)		,000	,001	,000

** . Correlation is significant at the 0.01 level (2-tailed).

a. List wise N=414

Table 9: Hypothesis Test Results **Correlations^a**

H1e: Innovation of mobile marketing service has a positive effect on the perceived level of observability.	q5.2	q5.25	q5.26
q5.2 Pearson Correlation	1	,347**	,377**
Sig. (2-tailed)		,000	,000

** . Correlation is significant at the 0.01 level (2-tailed).

a. List wise N=414

Table 10: Hypothesis Test Results **Correlations^a**

H1f: Innovation of mobile marketing service has a positive effect on the perceived level of confidence.	q5.2	q5.31	q5.32	q5.33	q5.34
q5.2 Pearson Correlation	1	,312**	,301**	,356**	,421**
Sig. (2-tailed)		,000	,000	,000	,000

** . Correlation is significant at the 0.01 level (2-tailed).

a. List wise N=414

Table 11: Hypothesis Test Results **Correlations^a**

H1g: Innovation of mobile marketing service has a positive effect on the perceived level of risk.	q5.2	q5.35	q5.36	q5.37	q5.38
q5.2 Pearson Correlation	1	,272**	,242**	,288**	,350**
Sig. (2-tailed)		,000	,000	,000	,000

** . Correlation is significant at the 0.01 level (2-tailed).

a. List wise N=414

Table 12: Hypothesis Test Results **Correlations^a**

H1h: Innovation of mobile marketing service has a positive effect on the perceived level of allowed suggestibility.	q5.2	q5.27	q5.28	q5.29	q5.30
q5.2 Pearson Correlation	1	,220**	,265**	,189**	,209**
Sig. (2-tailed)		,000	,000	,000	,000

** . Correlation is significant at the 0.01 level (2-tailed).

List wise N=414

q5.2: I know most of mobile marketing services innovations made by the mobile operators.

When tables 5, 6, 7, 8, 9, 10, 11 and 12 are analyzed, positive relationship between mobile marketing service innovation and factors of adoption to innovation process in a significance level of $p = 0.01$ is observed. Thus, by accepting H1, the mobile marketing service innovation, can be said to have positive effect on the adoption process to innovation. In this sense, increasing the level of mobile marketing services innovation, the level of adoption to the innovation will also increase. The results of analysis about the relationship between the factors of adoption to innovation process and consumer attitudes are located in the following tables.

Table 13: Hypothesis Test Results **Correlations^a**

H2: The levels of perceived relative dominance of innovation have a positive effect on the consumer's attitudes towards service innovations.	q5.3	q5.4	q5.5	q5.6	q5.7	q5.8
q5.9 Pearson Correlation	,337**	,288**	,197**	,014	,330**	,504**
Sig. (2-tailed)	,000	,000	,000	,779	,000	,000
q5.10 Pearson Correlation	,319**	,276**	,274**	,086	,299**	,369**
Sig. (2-tailed)	,000	,000	,000	,081	,000	,000
q5.11 Pearson Correlation	,303**	,270**	,217**	,026	,330**	,325**
Sig. (2-tailed)	,000	,000	,000	,602	,000	,000
q5.12 Pearson Correlation	,263**	,226**	,177**	-,008	,316**	,374**
Sig. (2-tailed)	,000	,000	,000	,874	,000	,000
q5.13 Pearson Correlation	,228**	,233**	,205**	,042	,290**	,285**
Sig. (2-tailed)	,000	,000	,000	,398	,000	,000
q5.14 Pearson Correlation	,290**	,259**	,296**	,077	,280**	,323**
Sig. (2-tailed)	,000	,000	,000	,116	,000	,000
q5.15 Pearson Correlation	,206**	,174**	,123*	,001	,292**	,289**
Sig. (2-tailed)	,000	,000	,000	,012	,988	,000

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

a. List wise N=414

Table 14: Hypothesis Test Results **Correlations^a**

H3: The levels of perceived compatibility of innovation have a positive effect on the consumer's attitudes towards service innovations.	q5.3	q5.4	q5.5	q5.6	q5.7	q5.8
q5.19 Pearson Correlation	,291**	,264**	,341**	,175**	,224**	,307**
Sig. (2-tailed)	,000	,000	,000	,000	,000	,000
q5.20 Pearson Correlation	,419**	,352**	,380**	,094	,236**	,335**
Sig. (2-tailed)	,000	,000	,000	,055	,000	,000
q5.21 Pearson Correlation	,400**	,343**	,327**	,102*	,282**	,289**
Sig. (2-tailed)	,000	,000	,000	,038	,000	,000

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

a. List wise N=414

Table 15: Hypothesis Test Results **Correlations^a**

H4: The levels of perceived complexity of innovation have a positive effect on the consumer's attitudes towards service innovations.	q5.3	q5.4	q5.5	q5.6	q5.7	q5.8
q5.16 Pearson Correlation	,204**	,157**	,230**	,093	,282**	,304**
Sig. (2-tailed)	,000	,001	,000	,060	,000	,000
q5.17 Pearson Correlation	,251**	,303**	,302**	,094	,241**	,299**
Sig. (2-tailed)	,000	,000	,000	,057	,000	,000
q5.18 Pearson Correlation	,275**	,237**	,315**	,163**	,252**	,291**
Sig. (2-tailed)	,000	,000	,000	,001	,000	,000

** . Correlation is significant at the 0.01 level (2-tailed).

a. List wise N=414

Table 16: Hypothesis Test Results **Correlations^a**

H5: The level of perceived experimentable of innovation have a positive effect on the consumer's attitudes towards service innovations.	q5.3	q5.4	q5.5	q5.6	q5.7	q5.8
q5.22 Pearson Correlation	,310**	,299**	,172**	,086	,259**	,289**
Sig. (2-tailed)	,000	,000	,000	,082	,000	,000
q5.23 Pearson Correlation	,245**	,271**	,150**	,030	,294**	,301**
Sig. (2-tailed)	,000	,000	,002	,537	,000	,000
q5.24 Pearson Correlation	,218**	,275**	,134**	,015	,255**	,271**
Sig. (2-tailed)	,000	,000	,006	,762	,000	,000

** . Correlation is significant at the 0.01 level (2-tailed).

a. List wise N=414

Table 17: Hypothesis Test Results

Correlations^a

H6: The levels of perceived observability of innovation have a positive effect on the consumer's attitudes towards service innovations.	q5.3	q5.4	q5.5	q5.6	q5.7	q5.8
q5.25 Pearson Correlation	,313**	,341**	,376**	,149**	,302**	,374**
Sig. (2-tailed)	,000	,000	,000	,002	,000	,000
q5.26 Pearson Correlation	,336**	,295**	,291**	,143**	,214**	,270**
Sig. (2-tailed)	,000	,000	,000	,004	,000	,000

** . Correlation is significant at the 0.01 level (2-tailed).

a. List wise N=414

Table 18: Hypothesis Test Results

Correlations^a

H7: The levels of perceived confidence of innovation have a positive effect on the consumer's attitudes towards service innovations.	q5.3	q5.4	q5.5	q5.6	q5.7	q5.8
q5.31 Pearson Correlation	,276**	,319**	,346**	,165**	,311**	,304**
Sig. (2-tailed)	,000	,000	,000	,001	,000	,000
q5.32 Pearson Correlation	,316**	,340**	,360**	,143**	,182**	,214**
Sig. (2-tailed)	,000	,000	,000	,004	,000	,000
q5.33 Pearson Correlation	,359**	,308**	,310**	,193**	,254**	,317**
Sig. (2-tailed)	,000	,000	,000	,000	,000	,000
q5.34 Pearson Correlation	,350**	,387**	,301**	,131**	,266**	,339**
Sig. (2-tailed)	,000	,000	,000	,007	,000	,000

** . Correlation is significant at the 0.01 level (2-tailed).

a. List wise

N=414

Table 19: Hypothesis Test Results

Correlations^a

H8: The levels of perceived risk of innovation have a positive effect on the consumer's attitudes towards service innovations.	q5.3	q5.4	q5.5	q5.6	q5.7	q5.8
q5.35 Pearson Correlation	,344**	,327**	,358**	,201**	,303**	,278**
Sig. (2-tailed)	,000	,000	,000	,000	,000	,000
q5.36 Pearson Correlation	,208**	,297**	,313**	,145**	,241**	,231**
Sig. (2-tailed)	,000	,000	,000	,003	,000	,000
q5.37 Pearson Correlation	,245**	,223**	,246**	,244**	,206**	,228**
Sig. (2-tailed)	,000	,000	,000	,000	,000	,000

** . Correlation is significant at the 0.01 level (2-tailed).

a. List wise N=414

Table 20: Hypothesis Test Results

Correlations^a

H9: The levels of perceived permitted suggestibility of innovation have a positive effect on the consumer's attitudes towards service innovations.		q5.3	q5.4	q5.5	q5.6	q5.7	q5.8
q5.27	Pearson Correlation	,100*	,203**	,125*	,101*	,212**	,269**
	Sig. (2-tailed)	,041	,000	,011	,040	,000	,000
q5.28	Pearson Correlation	,274**	,225**	,311**	,081	,345**	,215**
	Sig. (2-tailed)	,000	,000	,000	,099	,000	,000
q5.29	Pearson Correlation	,253**	,301**	,206**	,119*	,290**	,302**
	Sig. (2-tailed)	,000	,000	,000	,015	,000	,000
q5.30	Pearson Correlation	,195**	,274**	,200**	,058	,221**	,272**
	Sig. (2-tailed)	,000	,000	,000	,243	,000	,000

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

a. List wise N=414

When table 13, 14, 15, 16, 17, 18, 19 and 20 are analyzed, positive relationship between consumers' attitudes towards service innovations and factors of adoption to innovation process in a significance level of $p = 0.01$ is observed. During analyze we detected too weak correlation between consumer behavior and espouse of innovation q5.6 (In generally I am not satisfied with the service innovations of mobile marketing.) The correlation is $p = 0.01$. This declaration has eliminated (q5.6) between factors of effectiveness about purchasing, during analyze of reliability. According to these results, developed H2, H3, H4, H5, H6, H7, H8, and H9 of the model of the study are acceptable. Thus, increasing levels of perception within the factors of adoption to innovation process, consumers' attitudes regarding service innovations can be said to be increased positively.

Table 21: Hypothesis Test Results

Correlations^a

H10: Consumers' attitudes on service innovations have a positive effect on intention to repurchase service innovation.		q5.39	q5.40	q5.41
q5.3	Pearson Correlation	,267**	,311**	,269**
	Sig. (2-tailed)	,000	,000	,000
q5.4	Pearson Correlation	,343**	,354**	,280**
	Sig. (2-tailed)	,000	,000	,000
q5.5	Pearson Correlation	,332**	,361**	,326**
	Sig. (2-tailed)	,000	,000	,000
q5.6	Pearson Correlation	,171**	,137**	,061
	Sig. (2-tailed)	,000	,005	,214
q5.7	Pearson Correlation	,332**	,253**	,199**
	Sig. (2-tailed)	,000	,000	,000
q5.8	Pearson Correlation	,391**	,438**	,308**
	Sig. (2-tailed)	,000	,000	,000

** . Correlation is significant at the 0.01 level (2-tailed).

a. List wise N=414

When the Table 21 has analyzed, we find positive correlation between behaviors of consumers' to service innovation and re-purchase to service innovation under meaning of $p=0.01$. During analyze we detected too weak correlation or non-correlation between consumer behavior and re-purchase to service innovation $q5.6$ (In generally I am not satisfied with the service innovations of mobile marketing). Thus, increasing of consumers' attitudes regarding service innovations, intentions to re-purchase service innovations can be said to be increased.

Conclusion

There are three largest GSM operators that provide services in mobile communication market of Turkey. They are Turkcell, Vodafone and Avea. According to the Information Technologies and Communications Board in March 2011 mobile number of subscribers in Turkey was approximately 62 million. There were 21 million of 3G subscribers and along with 3G service number of subscribers to mobile internet services reached 1,862,888 in the first quarter of 2011. Mobile marketing has rapidly increasing trend all over the world. In the field of mobile marketing Turkey shares market leadership with U.S., Japan and England. Location-based services, NFC and other technologies, which began to be used in mobile marketing, in the growing smart device market helps to accelerate the development of mobile marketing.

Among service innovations in the field of mobile marketing applications; products and applications such as allowed database applications, location based services, TL/min campaigns and TonlaKazan are located (BTİK, 2011; www.computerworld.com.tr/uzmanlara-gore-turkiye-mobil-pazarlama-uncusu-detay_6330.html, 2011). This kind of service innovations can affect consumers' perceptions and attitudes towards mobile marketing applications. Development of consumer's attitudes related to mobile marketing service innovations in a positive way will positively affect the intentions of consumers to re-purchase these types of services.

The aim of the study is to investigate the effects of innovation of the mobile operators' services on the levels of adoption of consumers to these services and therefore to re-purchase the same operator services. The assumption of the study is that intention to re-purchase, that is based on characteristics of perceived innovation and affected by service innovation, depends on consumer attitudes. As a result of factor analysis, nine factors were determined to be effective on the intentions of consumers to re-purchase innovations in mobile marketing services. They are Trying Ability ($\alpha=0.82$), Perceived risk ($\alpha = 0.75$), Attitude ($\alpha = 0.74$), Relative Dominance ($\alpha = 0.85$) Allowed suggestibility ($\alpha = 0.70$), Compatibility ($\alpha = 0.69$), Confidence ($\alpha = 0.77$), Complexity ($\alpha = 0.78$) and Observability ($\alpha = 0.73$).

Among all factors Trying Ability describes 32% of the total variance. In comparison with other factors it has the highest proportion of variance. In this sense, being capable of trying ability of mobile marketing service innovations will positively affect adoption of consumers to these types of services and attitudes towards this kind of services and, therefore, intentions to re-purchase. Service innovations tried by consumers are able to provide both facilitating of consumers to adapt to these services and improving their positive attitude toward to these services. It is important to develop to try ability specification of mobile marketing service innovation. In this meaning that this made by operators for embrace of mobile marketing innovations, for developing to positive approach and re-purchase to mobile marketing innovation service by consumers. The assumption of the study is that intention to re-purchase, that is based on characteristics of perceived innovation and affected by service innovation, depends on consumer attitudes. Within the concept of this hypothesis, in firstly there is eight sub-hypothesis about mobile marketing service innovations and it is positive effect about hypothesis. There are also eight hypotheses about process of acceptance of innovation factors to positive effective by consumer. And there is another hypothesis developed about re-purchases intention that has positive effective.

All of these hypotheses were analyzed with Pearson's correlation coefficient double-sided relationship between the variables was determined at level of significance $p = 0.01$. In this meaning mobile marketing service innovations are affecting that level of perception of innovation espouse factors. These factors espouse level is effecting consumer approach about service innovation. And consumer approach is effecting to re-purchase of service innovation. There is a bidirectional relationship between them. Developing of service innovations of mobile marketing advances in levels of perception of innovations, and thus consumers' attitudes toward service innovation and intentions to re-purchase these services will positively be affected.

At this point, the important subjects are re-purchasing factors which are effective by consumer for mobile operators. These factors have analyzed by detail in factor analyze section. Data of the study include individuals up to 18 residing in the center of province of Corum. Therefore, the results of the study about service innovation of mobile marketing are limited by levels of perception of individuals up to 18 residing in the province of Corum. Results of the study contain the quality of data for the future similar studies in the field of mobile marketing. For this purpose the survey questions to measure the consumer perception to mobile marketing service innovations have been added at the end of the study.

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Appendix

Services innovations of mobile marketing covers applications like mobile payment, mobile tagging, mobile games, mobile coupons, mobile internet, Turkcell's "Compass", Vodafone's, "What's around me?" and Avea's "Mobile Vision".

1. Which specification and generation of mobile phones do you have?

() 2. (2G) () 3. (3G)

2G: Generation of mostly a single color, a non-video calls and limited multimedia feature mobile phone

3G: Color, visual communication technology, multimedia-enabled mobile phone generation.

2. Which GSM Operator do you use?

() Turkcell () Vodafone () Avea () Turkcell+Avea

() Turkcell+Vodafone () Vodafone+Avea

3. Which mobile device are you using most in your daily life?
 mobile phone Smartphone laptop
 Tablet PC GPS PDA

4. Which one Multi-Service Mobile Marketing Innovations are you using most? (mark only one)
 Mobile Payment Turkcell "Compass" Vodafone "what's around me?"
 Mobile Games SMS Campaigns Mobile Internet
 Mobile Coupons Other (please specify)
 Avea "Mobile Vision"

5. Please indicate your level of participation in the following views about the services innovations of mobile marketing.
 (1) Strongly Disagree (2) Disagree (3) Undecided (4) Agree (5) Strongly Agree

SERVICE INNOVATION	1	2	3	4	5
1. Being aware about mobile marketing service innovations					
2. I know most of mobile marketing services innovations made by the mobile operators.					
ATTITUDE					
3. I like innovations of mobile marketing services.					
4. I think that of mobile marketing service innovations are useful for me and my environment					
5. I closely follow Mobile marketing service innovations.					
6. In generally I am not satisfied with the service innovations of mobile marketing.					
7. In case the service innovations of mobile marketing are developed and diversified, my desire change the habits of mobile technology usage will increase.					
8. I have positive thoughts about the development of mobile marketing service innovations.					
RELATIVE ADVANTAGE					
9. Allows reaching information more quickly.					
10. Enhances my quality of information.					
11. Increase the effect gathering of information.					
12. Makes my daily my life easier.					
13. Improves my communication performance.					
14. Allows me to have better control of communication.					
15. enhance competition in sector of communication					
COMPLEXITY					
16. Easy to learn how to use.					
17. By using the services innovations of mobile marketing I can easily do anything I want.					
18. Easy to use.					
COMPATIBILITY					
19. Service innovations of mobile marketing are compatible with the method of connecting to the Internet.					
20. Service innovations of mobile marketing are appropriate to my way of gathering information on products and services.					
21. Service innovations of mobile marketing are eligible to receive information about products and services.					
TRYING ABILITY					
22. I would like to use on a trial basis before deciding whether to accept Service innovations of mobile marketing					
23. I would like to be able to examine the suitability of services before deciding whether to accept service innovations of mobile marketing.					
24. Should be allowed to use long enough on a trial basis to see what you can do with service innovations of mobile marketing.					

OBSERVABILITY					
25. I have seen what the people around me could do using the service innovations of mobile marketing.					
26. I have seen many people around me are using the service innovations of mobile marketing.					
ABLE TO TAKE PERMISSION					
27. Before sending messages about the service to innovate of mobile marketing of businesses to me I think taking my permission is important.					
28. If I guess to include of messages which are send by operators, I can allow.					
29. If I could guess content of the messages sent by mobile marketing about the service innovations of enterprises I could allow messages to be send					
30. I can allow getting messages by mobile marketing about the service innovations of enterprises if messages are personalized.					
CONFIDENCE					
31. I think that Mobile marketing service innovations are reliable way to obtain information.					
32. Service innovations of mobile marketing are reliable source of information.					
33. Service innovations of mobile marketing are reliable source of personalized marketing messages.					
34. Because messages about service innovations of mobile marketing are up to date, they are reliable.					
PERCEIVED RISK					
35. It is reliable to accept and reply on mobile marketing messages via mobile phone.					
36. Receiving marketing messages via mobile phones isles risky than taking these messages by e-mails or on TV ads.					
37. I do not think that accepting marketing messages of mobile marketing would cause the risk for privacy.					
38. The service innovations of mobile marketing increase the risk for privacy in communication.					
INTENTION TO RE-PURCHASE					
39. I intend to use current mobile marketing services innovations once in a while (sometimes) in the next six months.					
40. I intend to use current mobile marketing services innovations within the next six months frequently.					
41. In order to use services innovations of mobile marketing I intend to purchase mobile phone within the next six months.					

6. Please specify the reason of Purchasing Mobile Marketing Service innovations.

- () Enjoyable () Increases my Communication Quality () Makes my daily Life Easier
- () Its why that my roundabout people using that () Easy to Use () do not use
- () Other (please specify).....

7. Please indicate below your personal information.

7.1. Your age

7.2. Gender.....

7.2. The monthly income.....

7.2. Occupation.....

7.2. Education Status.....