

# Exploring the Quality Dimensions of Mobile Instant Messaging Applications and Effects of Them on Customer Satisfaction

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**Abstract :** Aim of this research was to explore the dimensions of quality for mobile instant messaging applications which we believed they had the effects on the customer satisfaction. For this purpose, authors have discussed issue with the experts of this field and explored 7 dimensions such as communication, data transfer, features, aesthetics, security, feedback, and marketing. The survey questionnaire was asked to 1012 people who have been utilizing the one of the Instant Messaging Applications in Turkey. 620 of the data were ready to be used for analysis and remaining data was not used due to the reliability issues. Explanatory factor analysis was conducted to elaborate the dimensions and reliability analysis was conducted in order to check the reliability of the questionnaire. Finally, Structural Equation Modeling (SEM) was conducted to see how those dimensions effected the satisfaction of the customers. It was seen that all of those seven dimensions had significant effect on customer satisfaction of the Instant Messaging applications. However, those dimensions explained 60% of the total variance of satisfaction.

**Keywords :** Perceived Service Quality, Satisfaction of Users, MIMQual, Mobile Instant Messaging Applications, Customer Satisfaction, SEM.

## 1. INTRODUCTION

Mobile instant messaging applications are more widely getting used after smart mobile phones production increased. All over the world, people are utilizing these applications in order to communicate with friends, relatives...etc. However, most of these applications are free of charge and easily can be downloaded from the internet. May be for this reason, these applications became enormous sector. Nowadays, there are many Instant Messaging Applications used by societies to communicate. Finally, great number of users on mobile instant messaging service directs e-business investors to this field.

As of this sector became a business field and there are so many variety of these applications. a user will be able to choose one or more of these applications. May be s/he will use one of these applications more than other applications which are also installed on their phones. This might be probably because the customer was satisfied with this application. Because many researches show that satisfaction is a key antecedent of repurchase or reutilization of a product or service (Anderson & Sullivan. 1993; Chang & Chang, 2010; Orel & Kara, 2014; Zeithaml et al., 1996). At this point, a question occurs such as; why the concerning application(s) make customer more satisfied than others? Of course the answer will not depend only on one factor. There might be many factors affecting the satisfaction of a customer from one application more than others. For this reason, in this research the possible factors which might affect the satisfaction of the customers were studied.

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**The main purpose of this research is :**

1. To show the determinants of the quality for mobile instant messages to the providers of mobile instant message services
2. To show the most important determinants which increase the satisfaction of users
3. To detect how much of the total variance of users' satisfaction do these determinants represent

For these purposes, a similar model of ServQual survey was proposed to create a survey questionnaire.

## **2. LITERATURE REVIEW**

### **2.1.1. Mobile Instant Messaging Applications**

MIM sector is becoming an enormous sector and a good investment field for e-business investors. There are 700 million of people in the world are using whatsapp. 600 million using Facebook Messenger, 500 million using WeChat, 300 million using Skype, 236 million using Viber, 181 million using Line, and 48 million of people in the world are using Kakaotalk (Woods, 2015). On the other hand, internet users in Turkey spend 25% of their time for MIM, 9.9% of their time for social networking, and remaining time for games, e-mails... etc. (Mohamud, 2009). This shows that internet users in Turkey spend the most of their internet time on MIM. For these reason, this field may become an important point for the e-business investors.

Shim and Shin (2016) investigated the moderator effect of group pressure in context of group chat by using mobile instant messages. They have conducted survey questionnaire to students in Korea. Ogara, Koh, and Prybutok (2014) have investigated the user satisfaction with mobile instant messages by using the models of channel expansion, social influence, social presence and media richness theories. Kiat and Chen (2015) have studied the mobiles instant messages in purpose of elder users' needs.

There are some other researches also performed on this field. For example, Deng, Lu, Wei, and Zhang (2010) have studied the satisfaction and loyalty of mobile instant messages users in China. Authors have included Trust, Service Quality, Perceived Value, Functional Value, Emotional Value, Social Value, and Monetary Value as the dynamics of satisfaction of the users. As one of the results of this research, variance for satisfaction and loyalty were 54% and 64%, respectively. But they have used only 3 items to measure perceived service quality of an application. On the other hand, we believe that only 3 items will not be enough to measure the perceived quality of MIMs. For this reason, in this study. we have followed a process to explore detailed dimensions of the service quality determinants of MIMs.

Another research on this field was studied by Oghuma, Libaque-Saenz, Wong, and Chang (2016). In this research, authors have studied understanding the continuance intention to use mobile instant messaging in Korea by using expectation-confirmation model. In that study, the researchers have determined the measurement items as; confirmation, perceived enjoyment, continuance intention, perceived service quality, satisfaction, Perceived Security, User Interface, and Perceived Usefulness.

In this study, explained variance of intention to continuance utilization of MIM was 55.8%. In this study also the authors have used only a few items to measure the perceived service quality. However, service quality determinants were increased in order to test how much those dimensions had impact on the users' satisfaction.

### **2.1.2. Customer Satisfaction**

Mobile instant messaging applications might be considered as service which has a provider and customer. So these applications might be evaluated from the quality point of view which effect the customer satisfaction (Aydinli and Demir, 2015, Wang, Y. and Lo, HP., 2002). Within this frame, first of all quality dimensions of this service should be explored in order to include some of the aspects of these factors in strategic plan. However, some of the factors may be more important that others by means of impact on the customers' satisfaction. For this aim, customers' satisfaction plays an important role for the service providers (Demir, Eray, and Erguvan, 2015; Drucker, 1954).

Customer satisfaction is the positive opinion of a customer about a product after utilizing the concerning good (Yi, 1990; Day, 1984; Kotler, 1991). If this opinion occurs, customer most probably will utilize the same service again because it is known that the satisfaction is a key factor for repurchasing and reutilization (Kozak & Rimmington, 2000; Su & Hsu, 2013). In this research, the parameters of application quality were explored in order to determine how much the customer satisfaction depends on those dimensions. Because it is known that the service quality plays an important role for customer satisfaction (Chi & Qu, 2008).

### 2.1.3. Perceived Service Quality

Perceived service quality can be explained as the perception of the customers about the excellence of the concerning service (Zeithaml, 1986). From this point of view, service quality has been studied by different researchers (Cohen and Whang, 1997; Cachon and Harker, 2002; Ernst and Powell, 1995; Dana Jr., 2001; Hall and Porteus, 2000; Gans, 2002; Li and Lee, 1994; Li, 1992; Karmarkar and Pitbladdo, 1997; Tsay and Agarwal, 2000; Nerlove and Arrow, 1962; Allon et al., 2011) because it is an important weapon for increasing the market share (Demir and Eray, 2015). Those studies were about the relationship between competitive markets and service quality. It can be observed from this studies that in competitive markets service quality also increase.

Business owners and CEOs can increase their market shares by continuously satisfying the customers' expectations and demands (Demir, Talaat, and Aydinli, 2015; Demir and Eray, 2015). This can be done by keeping the standards of the service quality that conform the customers' expectations (Mittal et. Al., 1998; Yang, Peterson, and Cai, 20013).

In the literature, various researchers have performed studies in order to determine and measure the service quality. Table below shows the detailed researches about this issue.

**Table 1. Service Quality Measurement Models.**

<i>No.</i>	<i>Researcher</i>	<i>Model</i>	<i>Key Model and Findings</i>
1.	Grönroos, 1984	Technical and Functional Quality Model	Service quality depends on the technical and functional quality and the image of the company
2.	Parasuraman, Zeithaml, and Berry, 1985	ServQual	Service quality is the result of expectations which is actualized or not along the dimensions of quality regarding to the conformance.
3.	Haywood and, Farmer, 1988	Dimension and Features Service Quality Model	This model considers quality management under three main dimensions such as tangibles, process, behavior and professional experience.
4.	Brogowicz, Delene, and Lyth, 1990	Service Quality and Synthesis Model	Planning, Implementation, and Controlling functions, which should be cared continuously by management, were defined. By this way service variations can be minimized.
5.	Cronin and Taylor, 1992	ServPerf	Claims that the service quality can be measured not from the expectations but from the perceptions of the customers.
6.	Mattson, 1992	Service Quality Ideal Value Model	Offers measure the service quality by comparing the usage of ideal standards with experiences.
7.	Teas, 1993	Performance Evaluation and Standard Quality Model	He reevaluated the expectation and redefined.
8.	Berkley and Gupta, 1994	Information Technology and Harmony Model	This model measures only the effect of information technology on the service quality and shows the way of measurement.
9.	Dobholkar, 1996	Features and General Impact Model.	He offered evaluation of service quality for technology based self service preferences. He didn't include features, price, tangibles...etc. in demography.

<i>No.</i>	<i>Researcher</i>	<i>Model</i>	<i>Key Model and Findings</i>
10.	Spreng and Mackoy, 1996	Perceived Service Quality and Satisfaction Model	Service quality is different from satisfaction and conformance effects the satisfaction. But the model doesn't mention about how to succeed the service quality.
11.	Sweeney, Soutar, and Johnson, 1997	Retail service Quality and Perceived Value Model	Service quality is different from satisfaction and conformance effects the satisfaction. But the model doesn't mention about how to succeed the service quality.
12.	Oh, 1999	Service Quality, Consumer Value, and Consumer Satisfaction Model	Technical service quality is the most efficient element for the product quality. It affects the willingness to purchase. Model considers money as scale.
13.	Dabholkar, 2000	Previous Effects and Mediator Factors	This model puts through the previous satisfaction levels about the concerning service.
14.	Frost and Kumar, 2000	Internal Service Quality Model	This model concerns about the expectations of the internal customers.
15.	Soteriou and Stavrinides, 2000	Internal Service Quality and Data Envelop Model	It shows the top sources in order to serve better quality of the service.
16.	Broderick and Vachirapornpuk, 2002	Internet Banking Model	It concerns the service quality at internet banking within double phase such as common service point and management of increasing consumer role.
17.	Santos, 2003	E- Service Quality Model	It mentions about the e0service quality. It doesn't give a specific measurement scale to researchers. It is not a statistical research.
18.	Parasuraman, Zeitamli, and Malhotra, 2005	E-S-Qual	It contains the dimensions for the service quality at the internet based service quality. Those dimensions are adequacy, Execution, Usability, and Privacy.

#### **2.1.4. Dimensions of Mobile Instant Messaging Applications Quality**

If service quality is the conformance of the customers' expectations, it can be said that the customers' expectation change from a service to another. For example, Yang, Peterson, and Cai (2003), have explored the service quality dimensions of internet retailing within 14 dimensions such as Responsiveness, credibility, ease of use, reliability, convenience, communication, access, competence, courtesy, personalization, continues improvement, collaboration, security/privacy, and aesthetics. Although these dimensions were more or less similar to the dimensions of service quality which was explored by Parasuraman et al. (1985) (empathy, responsiveness, assurance, reliability, and tangibles), still there were some technical dimensions which were unique.

In this study also of course the dimensions are somehow similar to the previous studies which were about the elaborating the service quality, there are some items and dimensions which are totally unique as the mobile instant messaging applications' customer satisfaction dimensions. Many of these applications' users were interviewed in Turkey. Simply the expectations of them from such an application were asked. The results were voice-recorded. According to the answers, some factors were determined. These factors were discussed with the experts on statistics, marketing, and production management from various universities and companies in Turkey. Finally, 7 factors were decided to determine as dimensions of applications quality. These factors can be sequenced as;

- 1. Communication :** Speed and quality of the communication is an important parameter. People may not want to use such an application which doesn't allow or provide fast and quality signals of communication. This communication could be video or voice. Related Questions;

- Voice Signals are delivered fast
  - Video call quality is high
  - Voice signals are quality
  - Video call signals are delivered fast
- 2. Data transfer :** Speed and quality of the data transfer is important parameter for the users. They care about how fast and quality a picture, video, message...etc. transferred to another party. Related Questions;
- Text messages are delivered fast
  - Video records are delivered fast
  - Pictures are delivered fast
  - Any document is delivered fast
- 3. Features :** Applications look like each other somehow. On the other hand, they differ from each other for some points, too. Some of the applications have better features which others don't. For example, an application may have a video call but another may not. This might affect the quality of service utilization. Related Questions;
- Number of stickers of this application are enough
  - There is location delivery option in this application
  - Location delivery option is nice
  - When you send a message, you can see that the other party has seen the message or not
  - I like it when I see that other party has seen the message or not
  - By the time other party connects to the internet, I can see that s/he is online
  - I like to see if the other party is online by the time s/he connects to the internet
- 4. Aesthetics :** It might be important for a user to have a more aesthetic application from some points of view such as color, good looking...etc. Related Questions;
- There is a very nice background style of this application
  - Colors of the background of this application is very nice
  - Visually messages are seen very nice
- 5. Security :** Communication via an application might seem as a precarious issue. From this point of view, a customer might chose an application which is more secure from the confidentiality of information (messages, voice, video...etc.) and contact information in order to keep the security of his/her security of communication. Related Questions;
- It is hard to hack my account in this application
  - I feel confident about my privacy while using this application
  - I know that my private information will not be shared with other parties
  - I know my messages will not be shared with other parties
  - I know my speeches will not be listened by other parties
- 6. Feedback :** Customers might care about the feedback evaluations of the application owners. It might be important how the applications are developed and improved from some aspects point of view based on the feedbacks of the customers. Related Questions;
- There is a strong feedback system in this application
  - Feedbacks of the customers are carefully taken into account
  - I think that owners of this application are developing the software based on the feedbacks
- 7. Marketing :** Customers might will to use such an application which is widely used by his/her friends and a group could be easily gathered when they would like to communicate together simultaneously. This can be when the application owner makes a strong marketing strategy. Related Questions;
- This application is widely used among my friends
  - Owners of this application are making very good marketing of this product
  - When I would like to create a group of my friends, I can include almost all of my friends
  - I think this is one of the most widely used applications

### 3. AIM AND RESEARCH MODEL OF THE STUDY

Aim of this study is to explore the dimensions of the mobile instant messaging applications which affect the satisfaction of the users. This might attract the attention of the application owners and e-business investors because the most important factors those affect the customer satisfaction was also specified in the study. Main hypothesis of the study is;

**H1:** Communication quality of an application has significant impact on the satisfaction of the customers

**H2:** Data Transfer quality of an application has significant impact on the satisfaction of the customers

**H3:** Security aspect of an application has significant impact on the satisfaction of the customers

**H4:** Features of an application has significant impact on the satisfaction of the customers

**H5:** Aesthetics view of an application has significant impact on the satisfaction of the customers

**H6:** Feedback quality of an application has significant impact on the satisfaction of the customers

**H7:** Marketing aspect of an application has significant impact on the satisfaction of the customers

These hypotheses are shown on graph 1 as;

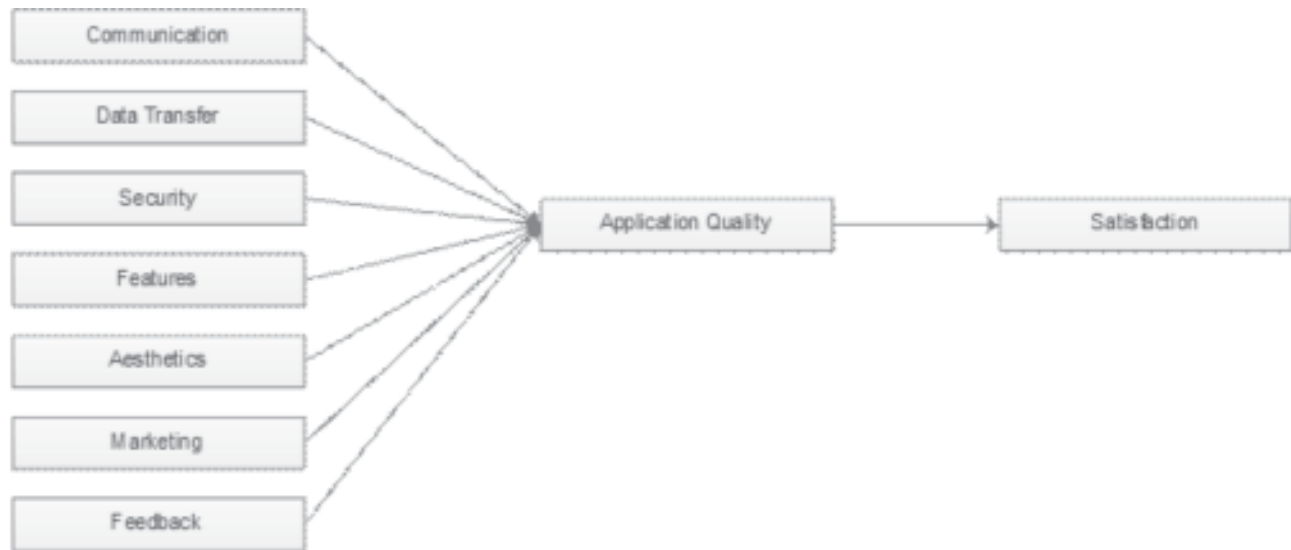


Fig. 1. Model of Research.

### 4. METHODOLOGY

#### 4.1. Data Collection

This study was conducted in Turkey. In order to understand about the ideas of the customers from those seven dimensions point of view, 30 questions were asked to 1012 people who were living in Turkey and utilizing one of mobile instant messaging applications. After conducting survey questionnaire, it was observed that only 620 of the data were valid. Remaining data was not utilized due to the reliability issues.

Among 620 participants, 251 were male and 369 of them were female. 102 of the target population was between 18 and 25 years old, 157 of them were between 26 and 35 years old, 220 of them were between 36 and 45 years old, 104 of them were between 46 and 55 years old and remaining 37 of the participators were above 55 years old. 251 of the population were utilizing Whatsapp, 69 of them were using Viber, 37 of them were using Kakao, 38 of them were using Line, 52 of them were using Facebook Messenger, 51 of the target population were using Skype, 42 of the participators were using WeChat, 37 of them were using tango, and the remaining people in the population were utilizing other mobile instant messaging applications.

## 4.2. Validity and Reliability Analysis

Furthermore, explanatory factor analysis was performed to validate the questionnaire and to do this, IBS SPSS 22 was used.

**Table 2. KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.800
Bartlett's Test of Sphericity	Approx. Chi-Square	17936.715
	df	435
	Sig.	.000

Table 1 show about the initial statistics of explanatory factor analysis. Regarding to the information given on table 1, Kaiser-Meyer-Olkin Measure result is 0,800. This test determines about the adequacy of the sample. Minimum acceptability level of this result is 0,50. According to this result, it can be said that sample of this questionnaire is adequate. Furthermore, Bartlett's Test of Sphericity result determines whether the dimensions in this questionnaire were gathered significantly or not. In this study, the result of Bartlett's Test of Sphericity is below 0,50. This shows that the factors of the questionnaire are significant, too (Field 2000).

**Table 3. Descriptive Statistics**

	<i>Mean</i>	<i>Std. Deviation</i>	<i>Anti-Image</i>	<i>Extraction</i>
Q1	1.914	.7505	0.755	0.725
Q2	1.897	.7344	0.748	0.754
Q3	2.351	.9777	0.749	0.701
Q4	2.427	.9506	0.772	0.713
Q5	1.632	.5878	0.819	0.616
Q6	1.699	.6283	0.790	0.716
Q7	1.858	.8258	0.905	0.700
Q8	1.822	.7074	0.801	0.649
Q9	2.875	.9182	0.728	0.500
Q10	2.920	.9878	0.839	0.666
Q11	2.930	.9560	0.756	0.791
Q12	2.952	1.0898	0.784	0.796
Q13	2.542	1.1266	0.836	0.722
Q14	2.156	.8353	0.773	0.545
Q15	2.124	1.0276	0.834	0.644
Q16	1.567	.7445	0.808	0.689
Q17	1.670	.7676	0.842	0.653
Q18	1.580	.6807	0.802	0.581
Q19	1.587	.7438	0.795	0.653
Q20	1.641	.7874	0.830	0.593
Q21	2.351	1.0145	0.700	0.704
Q22	2.373	1.1122	0.710	0.840

	<i>Mean</i>	<i>Std. Deviation</i>	<i>Anti-Image</i>	<i>Extraction</i>
Q23	2.166	.8907	0.747	0.656
Q24	3.024	.8621	0.817	0.584
Q25	2.936	.7540	0.767	0.780
Q26	2.494	.8219	0.847	0.629
Q27	1.985	.9130	0.751	0.711
Q28	2.247	.8510	0.840	0.509
Q29	1.978	.7966	0.776	0.592
Q30	1.969	.8602	0.783	0.725

Table 2 explains about the perceptions of the customers about the evaluation of the quality of the mobile instant messaging applications within 7 factors. It is known that anti-image correlation results must be above 0.50 (Field 2000). Furthermore, both anti-image correlation and extraction results are also above 0,500 and it means that there is no need to extract any item from the questionnaire.

**Table 4. Pattern Matrix**

	<i>Component</i>						
	<i>Security</i>	<i>Aesthetics</i>	<i>Communication</i>	<i>Marketing</i>	<i>Feedback</i>	<i>Data Transfer</i>	<i>Features</i>
Q1			.853				
Q2			.882				
Q3			.789				
Q4			.793				
Q5						.771	
Q6						.775	
Q7						.551	
Q8						.626	
Q9	.607						
Q10	.786						
Q11	.937						
Q12	.908						
Q13	.759						
Q14							.421
Q15							.490
Q16							.700
Q17							.703
Q18							.508
Q19							.827
Q20							.797
Q21		.931					
Q22		.933					



<i>Component</i>							
	<i>Security</i>	<i>Aesthetics</i>	<i>Communication</i>	<i>Marketing</i>	<i>Feedback</i>	<i>Data Transfer</i>	<i>Features</i>
Q23		.833					
Q24					.487		
Q25					.412		
Q26					.437		
Q27			.965				
Q28			.467				
Q29			.771				
Q30			.903				

The results of principle components analysis are given on the Table 3. The factor loads of each items are determined below the concerning factor. This factor load shouldn't be less than 0,400 (Field, 2000). However, there is no item that falls below 0,400 under any factor. Thus, it can be said that the factors are valid.

**Table 5. Eigen values and explained variances of the dimensions**

	<i>Security</i>	<i>Aesthetics</i>	<i>Communication</i>	<i>Marketing</i>	<i>Feedback</i>	<i>Data Transfer</i>	<i>Features</i>	
Eigen Values	6.890	3.710	2.876	2.037	1.804	1.610	1.196	<b>Total Variance</b>
Variance Explained	22.966	12.368	9.587	6.788	6.013	5.366	3.987	67.075

Table 4 shows about the Eigen values which determines if the concerning group of questions are a factor or not. It is known that if the Eigen value is above 1, the concerning group of questions are called as a factor. According to this information, the values of the 7 factors are above 1 and they are all considered as one factor. Furthermore, the explained variances of each factor are determined on table 4. Overall variance at this questionnaire is 67. Remaining details can be observed above on the table.

**Table 6. Reliability Analysis Results**

<i>Dimension</i>	<i>Cronbach's Alpha</i>
Communication	0.855
Data Transfer	0.818
Features	0.859
Aesthetics	0.781
Security	0.844
Feedback	0.744
Marketing	0.778
<b>Appqual</b>	<b>0.854</b>

Table 5 shows about the reliability of each factor. Reliability of each factor can be evaluated by measuring the cronbach's alpha value. For each factor cronbach's alpha shouldn't be lower than 0,700 (Devellis, 2003; Nunnaly, et. Al., 1967; Bland, Martin, and Altman, 1997). The results of the questionnaire in this study fit the requirements of the literature in every factor. This shows that the factors are reliable, too. Furthermore, the reliability of the survey questionnaire also was measured and observed as 0,854.

### 4.3. Structural Equation Modeling

The aim of structural equation modeling is to determine the impact of each dimension on the application service quality and determine the values of fit model. If there is any value that doesn't fit the requirements of the structural equation modeling, it needs to fix the parameters to increase the concerning value(s). For these reasons structural equations modeling was proposed. In this study,  $\chi^2/df$  result is 2,224 ( $\chi^2 = 863,095$   $df = 388$ ,  $P = 0.000$ ). It is known that  $\chi^2/df$  ratio should be between 0,10 and 3 (Adams, Nelson, et. al., 1992; Wang, Lin, et. al., 2006). However, it is better if this ratio is below 2 (Seyal, Rahman, et. Al., 2002). In this study the ratio is 2,224 can be considered as good fit. In the literature there are some model fit indexes. It can be said that it is acceptable if the concerning indexes are between 0,80-0,90 and the model is accepted as good model if those indexes are above 0,90 (Wang, Lin, et. al., 2006; Yap and Khong, 2006). Another index that was also obtained in this study is RMR that was observed as 0,5 in the study. However, this value should be between 0 and 1 but if it is equal or less than 0,05, this shows the good fit (Golob, 2003). RMSEA value in the study was observed as 0,05. If RMSEA value is between 0,05-0,08, it means the model is representing a good fit (Adams, Nelson, et. al., 1992; Costa-Font and Gil, 2009; Byrne, 2001) . Other indexes and standard values are given on the Table 6.

**Table 7. Model Fit Indexes**

<i>Model Fit Measure</i>	<i>Good Fit</i>	<i>Measured Value</i>
<b>X<sup>2</sup>/df</b>	≤ 3.00	2.224
<b>GFI</b>	≥ 0.90	0.91
<b>AGFI</b>	≥ 0.90	0.90
<b>NFI</b>	≥ 0.90	0.90
<b>RFI</b>	≥ 0.90	0.90
<b>CFI</b>	≥ 0.90	0.95
<b>IFI</b>	≥ 0.90	0.95
<b>TLI</b>	≥ 0.90	0.92
<b>RMR</b>	≤ 0-1	0.05
<b>RMSEA</b>	≤ 0.05-0.08	0.05

Structural equation modeling is a strong model where the degree of freedom of the model must be positive. Sample size plays an important role on the fitness and significance of the model. In the literature it was seen that minimum level of the sample must be 100 or for each item there should be at least 10 participant in order to propose structural equation modeling (Karagöz and Köstereliođlu, 2008; Teo and Choo, 2001; Jayaram, Kannan et. al., 2004; Jackson, 2003; Jaafar and Rafiq, 2005;). According to this information based on the literature, 620 participant can be considered as a good number. However, model fit values, which were shown on Table 8, are within acceptable range. RMR (0.05) and RMSEA (0.05) are below 0.8 (Yu, Ha, et. al., 2005; Yen, Chin-Sen, et. al., 2010). These findings are sufficient to accept the model as fit. This means that the results of the model can be evaluated. The results of structural equation modeling are given on the Table 7.

Before all, it was seen that all of the dimensions (Communication, Features, Marketing, Data Transfer Quality, Feedback, Aesthetics, and Security) together explains 60% of the overall satisfaction. That means total explained variance of the model is 60%.

H1 tested the relationship between communication and satisfaction of the mobile instant messaging application users. According to the model, communication quality has positive impact (0,691) on the mobile instant messaging application users. However, this impact is significant at  $t \geq 1,96$  (5,944). This results show that the hypothesis was accepted.

**Table 8. Results of structural equation modeling**

<i>Dimension</i>			<i>Non-Standard Estimates</i>	<i>Standard Estimates</i>	<i>S.E.</i>	<i>t results</i>	<i>sig.</i>	<i>Label</i>
Communication	⇒	Satisfaction	1.195	0.691	0.201	5.944	***	ACCEPTED
Features	⇒	Satisfaction	1.000	0.729	0.140	5.224	***	ACCEPTED
Marketing	⇒	Satisfaction	2.559	0.735	0.364	7.036	***	ACCEPTED
Data Transfer Quality	⇒	Satisfaction	0.939	0.777	0.155	6.058	***	ACCEPTED
Feedback	⇒	Satisfaction	1.265	0.636	0.203	6.220	***	ACCEPTED
Aesthetics	⇒	Satisfaction	1.682	0.457	0.280	6.002	***	ACCEPTED
Security	⇒	Satisfaction	0.472	0.218	0.125	3.776	***	ACCEPTED

H2 tested the relationship between data transfer quality and satisfaction of the mobile instant messaging application users. According to the model, data transfer quality has positive impact (0,777) on the mobile instant messaging application users. However, this impact is significant at  $t \geq 1,96$  (6,058). This results show that the hypothesis was accepted.

H3 tested the relationship between security and satisfaction of the mobile instant messaging application users. According to the model, security has positive impact (0,218) on the mobile instant messaging application users. However, this impact is significant at  $t \geq 1,96$  (3,776). This results show that the hypothesis was accepted.

H4 tested the relationship between features and satisfaction of the mobile instant messaging application users. According to the model, feature has positive impact (0,729) on the mobile instant messaging application users. However, this impact is significant at  $t \geq 1,96$  (5,224). This results show that the hypothesis was accepted.

H5 tested the relationship between aesthetics and satisfaction of the mobile instant messaging application users. According to the model, aesthetics has positive impact (0,457) on the mobile instant messaging application users. However, this impact is significant at  $t \geq 1,96$  (6,002). This results show that the hypothesis was accepted.

H6 tested the relationship between feedback and satisfaction of the mobile instant messaging application users. According to the model, feedback has positive impact (0,636) on the Instant Messaging application users. However, this impact is significant at  $t \geq 1,96$  (6,220). This results show that the hypothesis was accepted.

H7 tested the relationship between marketing and satisfaction of the mobile instant messaging application users. According to the model, marketing has positive impact (0,735) on the mobile instant messaging application users. However, this impact is significant at  $t \geq 1,96$  (7,036). This results show that the hypothesis was accepted.

## 5. IMPLICATIONS AND LIMITATIONS

It is foreseen that the mobile instant messaging applications will be the mostly used telecommunication tools among people in the near future. From this point of view investors must evaluate the satisfaction determinants of the customers carefully. For this reason, in this study, the authors explored the main determinants of the customer satisfaction on Instant Messaging applications.

Within the frame of the hypothesis, statistical analyses were conducted. According to the results of these analyses, it can be told that all of these seven factors have significant and positive impact on the Instant Messaging applications' users. However, these seven factors explain 60% of the overall satisfaction dimensions. Furthermore, it was seen that data transfer quality has the most impact (0.777) on the satisfaction of the customers. It shows that for the customers. who are using the Instant Messaging Applications in Turkey. data transfer quality is the most important factor that applications owners should be careful about. Secondly, Marketing (0.735) and Features (0.729) of the applications are important, respectively. This shows that customers' satisfaction is effected in the second row from the marketing that shows how wide concerning application is used and how different features this application has. In the third row, communication quality (0.691) and feedback (0.636) was important for the satisfaction of the customers. This shows that customers care about the oral communication quality and the feedback

from the overall evaluation of the application in the third row. The impact factors show that they are also important factors to be cared about. Finally, aesthetics (0.457) and security (0.218) are important factors in the fourth row for the customers. Here it was observed that these factors were less and more weakly important for the according to the remaining five factors which were established in the questionnaire. However, it can be said that, for the users of Instant Messaging Applications in Turkey, the security is not so much important as data transfer, marketing, communication... etc. This result is similar with the research that performed by Oghuma et al. (2016) and the following two conclusions can be extracted from this result such as;

1. Users of these applications don't care about if their information or any confidentiality will be shared with the third parties or not.
2. People of these applications don't specify the information or any confidentiality within the registration or utilization progress of the applications.

It was observed in this study that the most effecting factor among 7 dimensions was data transfer. This means that the population on which the survey was conducted was giving the most importance on the data transfer quality. Secondly important factor was observed as marketing. This means that the investors should include the marketing strategies in their strategic plans in order to widen the usage rate of their applications.

As mentioning about the limitation of the study, this study was performed only in Turkey. Moreover, the same survey can be conducted in different countries and cultures to see the differences and the similarities based on the language, culture, nationality, geography...etc. By this way, a cross-national study may come out.

## 6. CONCLUSIONS

As conclusion, this study consists of seven factors and conducted only in Turkey and 60% of the variance was explained. In this concept, we have widened the determinants of mobile instant messaging applications' service quality. In order to increase the explained variance to the upper levels, some mediator factors can be added such as internet. Because internet is one of the key factors that affect the service quality of the Instant Messaging applications. Furthermore, if the dimensions of the research that was performed by Deng et al (2010) and the dimensions of the research that was performed by Oghuma et al (2016) can be combined together, it is foreseen that the explained variance might be increased more. Although they have used many dimensions for satisfaction, Deng et al (2010) could reach 54% of total variance. This shows that if Deng et al (2010) include these dimensions which were explored in this research. They will most probably increase the total variance more than 54%. Another future research on this field can be determining how the satisfaction and loyalty affects the willingness to pay for Instant Messaging applications.

Deng et al (2016) have shown as their limitations that they couldn't estimate the direct effect of perceived service quality on the satisfaction of the customers. It was shown in this research that the perceived service quality of mobile instant messaging applications has big impact on the overall customer satisfaction. The concerning authors should take this case into consideration for the further researches.

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