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UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY: THE ADOPTION OF MOBILE MESSAGING APPLICATION***

According to Turkish Statistical Institute, 96.8% of households have mobile phones and smart phones. While mobile penetration was 1% in 1995, it reached 73% in 2014. Opening account of social media, messaging and chatting is the first activity in mobile phone users in Turkey. Consequently, understanding the main determinants of technology acceptance behavior is an important issue for both academicians and practitioners. Therefore, the aim of this study is to test the model of the adoption of mobile messaging applications, especially fast messaging. The framework of Unified Theory of Acceptance and Use of Technology (UTAUT) was used in the paper. For testing our hypotheses, questionnaires were given to people having mobile devices and mobile internet users. Our data was collected by convenience sampling method. The research hypotheses were tested by structural equation modeling (SEM). The results indicated that there were strong relationships among the research variables. Finally, theoretical and managerial implications of the study findings are discussed.

Keywords: Adoption of Mobile Messaging, Mobile Messaging, Unified Theory of Acceptance and Use of Technology (UTAUT), Turkey.

* Associate Professor Hanifi Murat Mutlu, PhD
Gaziantep University, Department Of International Trade and Logistics, Gaziantep, Turkey;
email: mmutlu@gantep.edu.tr.

** Ali Der, M.Sc.; Graduated from Department Of International Trade and Logistics,
Gaziantep University, Gaziantep, Turkey;
email: alimuratder@yahoo.com

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1. Introduction

The report of Centre of Retail Research points out that mobile e-commerce is the fastest growing trade¹. In 2014, total e-commerce via mobiles in Europe was €23.77 billion, moreover online retailing as a percentage of all retail sales is now 12.7%, but this percentage is expected to reach 21.5%. Mobile application market has a very important position in mobile e-commerce. According to a report of the Markets and Markets, the total global mobile applications market is expected to be worth US\$25.0 billion by 2015; hence the global market is expected to record a CAGR (compound annual growth rate) of 29.6% from 2010 to 2015². The report of eMarketer Inc. predicted that mobile phone messaging applications will be used by more than 1.4 billion consumers in 2015 and the growth in popularity of messaging applications will reach 2 billion users and represent 80% of smart phone users by 2018 worldwide³. In the light of these emerging developments, we aim to examine determinants of mobile message adoption and do it under the framework of UTAUT. The research question is raised: What factors influence the behavior intention and the use of mobile messaging adoption? Williams, Rana, and Dwivedi⁴, made a systematic literature review in ISI Web of Knowledge and Google Scholar on UTAUT from 2004 to June 2011. They found 174 usable research papers. Their findings reveal that UTAUT research had been based on results from 41 countries, but none of this research collected Turkish sample.

This paper offers three main contributions to the literature. Firstly, UTAUT-2 model has been considered less than model 1 in diffusion literature. The study contributes to the extension of UTAUT-2 model. This research tries to complete this gap. Secondly, the determinants of adoption of any mobile applications in Turkish consumers –emerging economy- can be analyzed and as a result it will provide better knowledge for the diffusion and adoption of literature. Finally, the study focuses on the adoption of specific application that is very intensive in the daily life. So, the results of this study are important for both academicians and practitioners.

¹ Centre of Retail Research (2016): *Online Retailing: Britain, Europe, US and Canada 2015*. Retrieved 29.03.2016 from <http://www.retailresearch.org/onlineretailing.php>

² Markets and Markets (2016): *World Mobile Applications Market Worth US\$25 Billion by 2015*. Retrieved 29.03.2016 from <http://www.marketsandmarkets.com/PressReleases/mobile-applications-market.asp>

³ eMarketer Inc. (2015). *Mobile Messaging to Reach 1.4 Billion Worldwide in 2015*. Retrieved 29.03.2016 from <http://www.emarketer.com/Article/Mobile-Messaging-Reach-14-Billion-Worldwide-2015/1013215#sthash.Sx3sNjo9.dpuf>

⁴ Williams, M.D., Rana, N.P., and Dwivedi, Y.K. (2015). The unified theory of acceptance and use of technology (UTAUT): a literature review. *Journal of Enterprise Information Management*, 28(3), 443-488.

2. Literature

Both academicians and practitioners are interested in understanding the main determinants of technology acceptance behavior. Venkatesh et. al.⁵ proposed UTAUT as an acceptance model after a comprehensive assessment of eight prominent models used in user acceptance of technology⁶:

- 1) The technology acceptance model (TAM) by Davis⁷
- 2) The theory of reasoned action (TRA) by Fishbein and Ajzen⁸
- 3) The theory of planned behavior (TPB) by Ajzen⁹
- 4) A model combining TAM and TPB (C-TAM-TPB) by Taylor and Todd (1995a¹⁰ and 1995b¹¹)
- 5) The motivational model (MM) by Davis, Bagozzi, and Warshaw¹²
- 6) The model of PC utilization (MPCU) by Thompson, Higgins, and Howell¹³
- 7) Social cognitive theory (SCT) by Bandura¹⁴
- 8) The diffusion of innovation theory (DOI) by Rogers¹⁵

These theories were tested on the diffusion and adoption of several new products or services. Moreover, some of these models focus on the adoption of information and communication technologies in particular. Venkatesh et. al.¹⁶

⁵ Venkatesh et. al. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 425-478.

⁶ Singeh, F.W., Abrizah, A., and Harun Abdul Karim, N. (2013). Malaysian authors' acceptance to self-archive in institutional repositories: Towards a unified view. *The Electronic Library*, 31(2), 188-207. p.190

⁷ Davis, F.D. (1986). A technology acceptance model for empirically testing new end-user information systems: theory and result. Ph.D. dissertation, Sloan School of Management, Massachusetts Institute of Technology.

⁸ Fishbein, M. and Ajzen I. (1975). *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*, MA: Addison-Wesley.

⁹ Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50 (2), 179-211.

¹⁰ Taylor, S., and Todd, P. (1995a). Assessing IT Usage: The Role of Prior Experience. *MIS Quarterly*, 19, 561-570.

¹¹ Taylor, S., and Todd, P.A. (1995b). Understanding information technology usage: A test of competing models. *Information systems research*, 6(2), 144-176

¹² Davis, F. D., Bagozzi, R. P., and Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of applied social psychology*, 22(14), 1111-1132.

¹³ Thompson, R. L., Higgins, C. A., and Howell, J. M. (1991). Personal computing: Toward a conceptual model of utilization. *MIS Quarterly*, 125-143.

¹⁴ Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*, NJ: Prentice Hall.

¹⁵ Rogers, E.M. (1962). *Diffusion of Innovations*, NY: Free Press.

¹⁶ Venkatesh et. al. (2003)

developed a new model by synthesizing eight models focusing on information and communication technologies in particular. This model is named the “Unified Theory of Acceptance and Use of Technology (UTAUT)”. This model identifies performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC) as direct determinants of behavioral intention and use behavior. The four variables (PE, EE, SI, and FC) directly affect intention and these variables, age, gender, experience and being voluntary directly affect the use¹⁷. UTAUT-2 was developed in 2012¹⁸. It is the extended form of UTAUT. UTAUT-2 added the following new variables to the model; its analysis unit focuses on user acceptance and use; Hedonic motivation (HM), Price-value (PV) and Habit (HB). The developer of UTAUT-2 asserted that Model-2 is better than Model-1, as the percentage of variance is explained in both intention and use¹⁹. Escobar-Rodriguez and Carvajal-Trujillo investigated the studies focusing on the UTAUT in consumer contexts including the adoption of the following information and communication technologies by users, given in Table 1²⁰.

The conceptual model of this study based on UTAUT-2 and the relationship among the research variables is given in figure 1.

Performance expectancy (PE) has been substituted by perceived usefulness among the construct of TAM. PE is defined as the degree to which an individual believes the system would be beneficial to his/her job performance²¹. Zuiderwijk, Janssen, and Dwivedi²² tested a modified model based on the UTAUT, used to empirically determine predictors influencing the acceptance and use of open data technologies. They posited that PE directly and positively influenced the intention to use and accept open data technologies. PE is one of the highest explanatory powers of variables on behavioral intention (BI)²³. Hew et. al. found that PE had a significant effect on BI to use mobile applications²⁴. Der and Mutlu asserted

¹⁷ Ibid., p. 447

¹⁸ Venkatesh, V., Thong, J. Y., and Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 36(1), 157-178.

¹⁹ Ibid.

²⁰ Escobar-Rodriguez, T., and Carvajal-Trujillo, E. (2014). Online purchasing tickets for low cost carriers: An application of the unified theory of acceptance and use of technology (UTAUT) model. *Tourism Management*, 43, 70-88.

²¹ Venkatesh et. al. (2003)

²² Zuiderwijk, A., Janssen, M., and Dwivedi, Y. K. (2015). Acceptance and use predictors of open data technologies: Drawing upon the unified theory of acceptance and use of technology. *Government Information Quarterly*, 32(4), 429-440.

²³ Helena Chiu, Y. T., Fang, S. C., and Tseng, C. C. (2010). Early versus potential adopters: Exploring the antecedents of use intention in the context of retail service innovations. *International Journal of Retail and Distribution Management*, 38(6), 443-459.

²⁴ Hew et. al. (2015). What catalyses mobile apps usage intention: an empirical analysis. *Industrial Management and Data Systems*, 115(7), 1269-1291.

that PE positively affects BI on mobile shopping²⁵. Al-Qeisi et. al. explored the link between website design quality and PE on Internet Banking Usage and found that PE had indirect effect on website design quality perceptions²⁶.

Table 1: *Examples of applications of the UTAUT*

Applications	Authors
Mobile banking	Zhou, Lu, and Wang, 2010; Baptista and Oliveira, 2015
Mobile payment	De Sena Abrahaoa, Moriguchib and Andrade, 2016
Mobile phone technologies	Lu, Yao, and Yu, 2005; Park, Yang, and Lehto, 2007; Wang and Wang, 2010; Zhou, 2011
Mobile shopping	Der and Mutlu, 2015
Online family dispute resolution services	Casey and Wilson-Evered, 2012
Location-based services	Xu and Gupta, 2009
Question answer services	Deng, Liu, and Qi, 2011
Internet banking	Abushanab and Pearson, 2007; Im, Hong, and Kang, 2011; Riffai, Grant, and Edgar, 2012; Al-Qeisi et. al., 2014; Martins, Oliveira and Popovic, 2014
Virtual learning technologies	Chiu and Wang, 2008
E-government	Sapio et. al., 2010; Schaupp, Carter, and McBride, 2010; Wang and Shih, 2009; Tosuntas, Karadadag and Orhan (2015)
E-recruiting	Laumer, Eckhardt, and Trunk, 2010
Online purchase intention in regard to rural tourism	San Martin and Herrero, 2012
Online ticket	Escobar-Rodriguez and Carvajal-Trujillo, 2014
Open data technologies	Zuiderwijk, Janssen, and Dwivedi (2015)

(Source: The table developed by Escobar-Rodriguez and Carvajal-Trujillo, 2014).

Effort expectancy (EE) is the degree of ease of technology use²⁷. EE is based on perceived ease of use from TAM. Researchers found a positive relationship

²⁵ Der A. and Mutlu H.M. (2015). The Adoption of Mobile Shopping in Turkish Consumer. International Academic Conference Management, Economics and Marketing.

²⁶ Al-Qeisi et. al. (2014). Website design quality and usage behavior: Unified Theory of Acceptance and Use of Technology. *Journal of Business Research*, 67(11), 2282-2290.

²⁷ Venkatesh, Thong, and Xu, (2012), pp. 159-162

between EE and BI²⁸. De Sena Abrahao, Moriguchi and Andrade showed that the PE, EE, SI and perceived risk explained 76.2% of the variance of the intention of adoption of mobile payment and the four factors had significant effect on the adoption²⁹. Tsourela and Roumeliotis found strong relationships between the PE, EE, SI and FC and BI in technology-based services³⁰. Awwad and Al-Majali empirically exhibited that BI depended on PE, EE, and SI in the context of electronic library services in public Jordanian universities³¹. The results of Teo and Noyes' papers demonstrated that PE, EE and SI were significant determinants of BI on technology in trainee teachers³².

Social influence (SI) is defined as "the degree to which an individual perceives that important others (family and friends) believe he or she should use the new system"³³. Defined as recommendation of the people considered important to use the new technology³⁴, social influence (SI) assumes that these persons will create positive influence on the adoption through these people's influencing the individual. Wu, Tao and Yang argued that PE, SI and FC of 3G mobile telecommunication services had positive influence towards BI³⁵.

Facilitating conditions (FC) is the degree of belief in the fact that individual's organizational and technical infrastructure system is available/ready to sup-

²⁸ Such as: (1) Martins, C., Oliveira, T., and Popovič, A. (2014). Understanding the Internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application. *International Journal of Information Management*, 34(1), 1-13. (2) Oechslein, O., Fleischmann, M., and Hess, T. (2014, January). An Application of UTAUT2 on Social Recommender Systems: Incorporating Social Information for Performance Expectancy. In *System Sciences (HICSS)*, 2014 47th Hawaii International Conference on (pp. 3297-3306). IEEE. (3) Nistor et. al. (2014). Participation in virtual academic communities of practice under the influence of technology acceptance and community factors. A learning analytics application. *Computers in Human Behavior*, 34, 339-344. (4) Escobar-Rodriguez and Carvajal-Trujillo, 2014.

²⁹ De Sena Abrahão, R., Moriguchi, S. N., and Andrade, D. F. (2016). Intention of adoption of mobile payment: An analysis in the light of the Unified Theory of Acceptance and Use of Technology (UTAUT). *RAI Revista de Administração e Inovação*, 13(3), 221-230.

³⁰ Tsourela, M., and Roumeliotis, M. (2015). The moderating role of technology readiness, gender, and sex in consumer acceptance and actual use of Technology-based services. *The Journal of High Technology Management Research*, 26(2), 124-136.

³¹ Awwad, M. S., and Al-Majali, S. M. (2015). Electronic library services acceptance and use: an empirical validation of unified theory of acceptance and use of technology. *The Electronic Library*, 33(6), 1100-1120.

³² Teo, T., and Noyes, J. (2014). Explaining the intention to use technology among pre-service teachers: a multi-group analysis of the Unified Theory of Acceptance and Use of Technology. *Interactive Learning Environments*, 22(1), 51-66.

³³ Venkatesh et. al. (2003), p. 451

³⁴ Venkatesh, Thong, and Xu, 2012, pp. 159-162

³⁵ Wu, Y. L., Tao, Y. H., and Yang, P. C. (2008). The use of unified theory of acceptance and use of technology to confer the behavioral model of 3G mobile telecommunication users. *Journal of Statistics and Management Systems*, 11(5), 919-949.

port the use of innovation³⁶. Venkatesh et. al. defined FC as the degree to which an individual believes that an organization and technical infrastructure is capable of supporting the system³⁷. FC affects both the behavioral intention and use.

Hedonic motivation (HM) is the first variable added to the UTAUT-2. HM is defined as “the fun or pleasure derived from using a technology”³⁸. HM refers to the enjoyment or happiness resulting from using a technology. HM plays an important role in BI for individual’s acceptance of a technology³⁹. Baptista and Oliveira hypothesized the relationships between the constructs of UTAUT-2 model and mobile banking BI and use behavior⁴⁰. They found that PE, HM, PV, and HB directly and significantly affect on BI.

UTAUT-1 was developed to adopt the system/innovation in the organizational structure. However, there are significant differences between the consumer use and organizational use. Cost and pricing may have a significant effect on individual’s acceptance of technology. For this reason, Venkatesh et. al. added **Price value (PV)** variable to the model. They defined PV as “consumers’ cognitive tradeoff between the perceived benefits of the applications and the monetary cost of using them”⁴¹.

Habit (HB) has been defined as “the extent to which people tend to perform behaviors automatically because of learning...”, “...HB is viewed as prior behavior and is measured as the extent to which an individual believes that behavior to be automatic”⁴².

By taking into account the framework of UTAUT-1 model, a recent paper found out the following results. Yang tested UTAUT model on 400 mobile services users⁴³. He found that PE, SI, and FC were positively related to BI regarding the use of mobile shopping services. Wong, Russo, and McDowall showed that PE and EE had a direct and statistically significant positive effect on BI⁴⁴. According to Deng, Liu, and Qi, PE and EE positively related to BI, on the other

³⁶ Venkatesh, Thong, and Xu, (2012), pp. 159-162

³⁷ Venkatesh et. al. (2003), p. 453

³⁸ Venkatesh, Thong, and Xu, (2012), p. 161

³⁹ Brown, S.A., and Venkatesh, V. (2005). A model of adoption of technology in the household: A baseline model test and extension incorporating household life cycle. *Management Information Systems Quarterly*, 29(3), 4, 399-426.

⁴⁰ Baptista, G., and Oliveira, T. (2015). Understanding mobile banking: The unified theory of acceptance and use of technology combined with cultural moderators. *Computers in Human Behavior*, 50, 418-430.

⁴¹ Venkatesh, Thong, and Xu, 2012, p. 161

⁴² Ibid.

⁴³ Yang, K. (2010). Determinants of US consumer mobile shopping services adoption: implications for designing mobile shopping services. *Journal of Consumer Marketing*, 27(3), 262-270.

⁴⁴ Wong, K. T., Russo, S., and McDowall, J. (2013). Understanding early childhood student teachers’ acceptance and use of interactive whiteboard. *Campus-Wide Information Systems*, 30(1), 4-16.

hand, FC related to the actual use on the web-based question-answer services adoption⁴⁵. Awwad and Al-Majali established that BI on electronic library services depended on PE, EE, and SI, while use behavior depended on FC⁴⁶. While FC had a significant effect on use behavior, PE and SI had a significant effect on BI, but not on EE⁴⁷. Lwoga and Kombo investigated the major predictors of actual usage of an e-learning system, but they did not find significant positive relationships between the main factors: PE, EE, FC and SI and the actual use⁴⁸.

Given the recent paper on UTAUT-2 model, Hew et. al. found that PE, EE, FC, HB, HM had significant effect on BI to use mobile applications⁴⁹. Gao, Li, and Luo made an empirical study on wearable technology acceptance and they showed that PE, HM, EE, SI were positively associated with individual's intention to adopt healthcare wearable devices⁵⁰. According to a study made by Wong et. al., EE, SI, FC, HM, and HB had a significant impact on BI to adopt mobile TV⁵¹. Oechslein, Fleischmann, and Hess developed UTAUT-2 model based framework in acceptance of social recommender systems⁵². They found that PE, EE, SI and HB positively influenced but FC had a negative effect on BI. Therefore, HM and PV were non-significant. In a study conducted on UTAUT-2, PE, EE, PV, and HB were found to have significant effects on BI for elderly people's adoptions of Internet banking⁵³. Morosan and DeFranco detected that PE, SI, HM, HB were significant at $p < .001$ and FC were significant at $p < .05$ ⁵⁴. Williams, Rana, and Dwivedi showed the relationships between major UTAUT variables in Table 2⁵⁵.

⁴⁵ Deng, S., Liu, Y., and Qi, Y. (2011). An empirical study on determinants of web based question-answer services adoption. *Online information Review*, 35(5), 789-798.

⁴⁶ Awwad and Al-Majali, (2015).

⁴⁷ Chang et. al. (2015). Exploration of usage behavioral model construction for university library electronic resources. *The Electronic Library*, 33(2), 292-307.

⁴⁸ Lwoga, E. T., and Kombo, M. (2015). Antecedents of continued usage intentions of web-based learning management system in Tanzania. *Education+ Training*, 57(7), 738-756.

⁴⁹ Hew et. al. (2015)

⁵⁰ Gao, Y., Li, H., and Luo, Y. (2015). An empirical study of wearable technology acceptance in healthcare. *Industrial Management and Data Systems*, 115(9), 1704-1723.

⁵¹ Wong et. al. (2014). Mobile TV: a new form of entertainment? *Industrial Management and Data Systems*, 114(7), 1050-1067.

⁵² Oechslein, O., Fleischmann, M., & Hess, T. (2014, January). An application of UTAUT2 on social recommender systems: Incorporating social information for performance expectancy. In 2014 47th Hawaii International Conference on System Sciences (pp. 3297-3306). IEEE.

⁵³ Arenas-Gaitán, J. O. R. G. E., Peral, B., and Jerónimo, M. A. (2015). Elderly and Internet Banking: An Application of UTAUT2. *Journal of Internet Banking and Commerce*, 20(1).

⁵⁴ Morosan, C., and DeFranco, A. (2016). It's about time: Revisiting UTAUT2 to examine consumers' intentions to use NFC mobile payments in hotels. *International Journal of Hospitality Management*, 53, 17-29.

⁵⁵ Williams, M. D., Rana, N. P., and Dwivedi, Y. K. (2015)

Table 2: *Relationships between major UTAUT variable*

Relations	PE-BI	EE-BI	SI-BI	FC-BI	FC-U	BI-U
Significant relation	93	64	86	32	36	49
Non-significant relation	23	46	29	15	18	11
Negative relation	0	0	0	1	0	1
Not tested	33	39	34	101	95	86

(Source: Williams, Rana, and Dwivedi, 2015)

In the light of these researches, we determined our hypotheses:

- H₁: PE has a positive direct effect on BI in the use of mobile message applications.
H₂: EE has a positive direct effect on BI in the use of mobile message applications.
H₃: SI has a positive direct effect on BI in the use of mobile message applications.
H₄: FC has a positive direct effect on BI in the use of mobile message applications.
H₅: HM has a positive direct effect on BI in the use of mobile message applications.
H₆: PV has a positive direct effect on BI in the use of mobile message applications.
H₇: HB has a positive direct effect on BI in the use of mobile message applications.
H₈: BI has a positive direct effect on Use.

3. Method

The data used in the study was collected along with second author's master thesis. Respondents filled in the second questionnaire form. While the first form measured adoption of mobile shopping, the second form was used for evaluation of the adoption of mobile messaging applications. Our population was required to have a smart phone, tablet computer or laptop and mobile Internet users, age +18. Convenience sampling method was used in the study. We collected 344 questionnaires.

The conceptual model was based on UTAUT-2 model⁵⁶. The research variables were adapted from in UTAUT model 1 and 2 and applied double translation process. PE, EE, SI, HM, PV, HB and BI measured 3 items while only FC consisted of 4 items. The total number of items was 28. All constructs are measured using multiple-item, five-point scales with anchors ranging from Strongly Disagree (= 1) to Strongly Agree (= 5). Reliability of research constructs are sufficient according to Nunnally who suggests that Cronbach's Alpha value of 0.70 or better⁵⁷. All constructs demonstrated acceptable reliability scores which is shown in Table 3.

⁵⁶ Venkatesh, Thong, and Xu, (2012)

⁵⁷ Nunnally, J. C. (1978). *Psychometric theory* (2th ed.). New York: McGraw-Hill. p.245.

4. Analysis

Table 3 shows the means, standard deviations, Cronbach's Alpha, and bivariate Pearson correlations of the constructs. We found positive and strong correlations between BI and determinants of mobile messaging adoption.

Table 3: Correlation Analyses

	1 FC	2 PE	3 EE	4 SI	5 HM	6 PV	7 HB	8 BI	9 USE	10 Age	α	Mean	SD
1	1										.90	3.77	.93
2	.659**	1									.84	3.64	.95
3	.786**	.702**	1								.92	3.78	.97
4	.571**	.554**	.547**	1							.85	3.29	.95
5	.626**	.621**	.607**	.492**	1						.91	3.50	.99
6	.661**	.607**	.600**	.474**	.692**	1					.89	3.62	.99
7	.377**	.416**	.411**	.441**	.555**	.448**	1				.86	2.85	1.09
8	.652**	.689**	.650**	.550**	.676**	.636**	.655**	1			.88	3.47	.99
9	.393**	.324**	.349**	.340**	.487**	.413**	.508**	.464**	1		.81	2.84	1.01
10	-.179**	-.199**	-.231**	-.148**	-.231**	-.224**	-.341**	-.204**	-.308**	1	-	29.62	7.81

Structural equation model (SEM) was used to test research the hypothesis. Hair et. al. suggested a set of fit indices used to examine the structural model⁵⁸. As shown in Table 4, χ^2/df (the ratio between Chi-square and degrees of freedom), AGFI (Adjusted Goodness of Fit Index), CFI (comparative fit index), and RMR (root mean square residual) of the model fit indices exceed the respective common acceptance but obtain value of GFI (goodness of fit index), NFI (normed fit index), RFI (relative fit index), and RMSEA (root mean square error of approximation) indices had a very closely acceptable level.

Table 4: Model Fit Indices

Model fit indices	Threshold	Obtained value
χ^2/df (the ratio between Chi-square and degrees of freedom)	<3	2.290
GFI (goodness of fit index)	>0.9	0.855
AGFI(Adjusted Goodness of Fit Index)	>0.8	0.818
CFI (comparative fit index)	>0.9	0.939
NFI (normed fit index)	>0.9	0.897
RMR (root mean square residual)	<0.08	0.070
RFI (relative fit index)	>0.9	0.879
RMSEA (root mean square error of approximation)	<0.05	0.064

⁵⁸ Hair et. al. (2010), Multivariate Data Analysis, 7th ed., Prentice Hall, Upper Saddle River, NJ.

In this study, PE ($\beta=.387, p<0.001$), HB ($\beta=.430, p<0.001$) and FC ($\beta=.211, p<0.05$) have a direct effect on BI. BI directly and positively affects behavior use ($\beta=.523, p<0.001$). Empirical research shows that H_1, H_4, H_7 and H_8 are supported. Overall, the model constructed in this study is shown in Figure 1.

Figure 1: *The Conceptual Model and Structural model results*

5. Conclusion

This study is based on the theory of adoption and diffusion of innovation. Among the main models and theories in the literature on diffusion and adoption of innovation, we preferred to use the framework of UTAUT-2 model. UTAUT-2 model is suitable to explain consumer' adoption process. We found that PE, EE, and HB play a crucial role in the adoption of mobile messaging applications. Regarding PE and EE, the findings match up with TAM. Mobile message applications have user friendly features –easy use- and usefulness -simple and hassle-free-for customer⁵⁹. HB was found the most important determinant of adoption of mobile message applications. In literature, HB usually has a significant and positive effect on adoption of mobile or online innovations⁶⁰. Venkatesh,

⁵⁹ Teo et. al. (2015). The effects of convenience and speed in m-payment. *Industrial Management and Data Systems*,115(2), 311-331.

⁶⁰ Such as; (1) Gao, Li, and Luo, 2015; (2) Wong et. al., 2014; (3) Escobar-Rodriguez and Carvajal-Trujillo, 2014

Thong and Xu stressed that there is a significant and strong effect of consumer's habit on personnel technology use. Therefore, decision makers consider the link between habit and behavior and use⁶¹.

This study has several limitations. The first limitation is the direct effects among variables but this has not been discussed in indirect, mediating, and moderator effects. The second limitation is sample method.

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DR HANIFI MURAT MUTLU, VANREDNI PROFESOR

Fakultet za međunarodnu trgovinu i logistiku, Univerzitet Gaziantep, Turska

MR ALI DER,

Fakultet za međunarodnu trgovinu i logistiku, Univerzitet Gaziantep, Turska

OBJEDINJENA TEORIJA PRIHVATANJA I UPOTREBE TEHNOLOGIJE: PRIHVATANJE APLIKACIJE MOBILNIH PORUKA

Prema Turskom institutu za statistiku, 96.8% domaćinstava ima mobilne i pametne telefone. Dok je zastupljenost mobilnih telefona iznosila 1% 1995, 2014. godine ona je dostigla 73%. Otvaranje naloga na društvenim mrežama, slanje poruka i časkanje su osnovne aktivnosti korisnika mobilnih telefona u Turskoj. Shodno tome, razumevanje glavnih determinanti ponašanja u vezi sa prihvatanjem tehnologija predstavlja važno pitanje, kako za naučnu zajednicu, tako i praksu. Zato je cilj ovog istraživanja da testira model prihvatanja aplikacija mobilnih poruka, posebno brzih poruka. U radu je upotrebljen okvir Objedinjene teorije prihvatanja i upotrebe tehnologije (UTAUT). Za testiranje naših hipoteza ispitanicima koji imaju mobilne telefone i koji su korisnici interneta putem telefona dati su upitnici. Podaci su prikupljeni metodom uzorkovanja. Hipoteze istraživanja su proverene modeliranjem strukturalne jednačine (SEM). Rezultati su potvrdili da postoji direktna veza među ispitanim varijablama. Na kraju rada je analiziran značaj rezultata za teoriju i menadžment.

Ključne reči: *Prihvatanje mobilnih poruka, mobilne poruke, Objedinjena teorija prihvatanja i upotrebe tehnologije (UTAUT), Turska*