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A study on tam: analysis of customer attitudes in online food ordering system

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Abstract

While e-commerce is rapidly spreading around the world, the food industry also began to take its' place in this growing area. The purpose of this study is to investigate the factors that influence the attitude of internet users towards online food ordering in Turkey among university students. It uses the Technology Acceptance Model (TAM) (Davis, 1986) as a theoretical grounding to study adoption of using the Web environment for ordering food. In addition to TAM; Trust, Innovativeness and External Influences are added to the model as main factors that influence internet users attitudes. The research universe is composed of undergraduate and graduate students. Studying a homogeneous group allows us to overcome potential side effects of studying a heterogeneous group with diverse internet usage habits.

*Keywords:*E-Commerce, Technology Acceptance Model, Online Food Ordering, Information Technology

1. Introduction

There are more than 1.46 billion internet users around the world and the number is growing rapidly day by day (Internet World Stats, 2009). While the capabilities of internet becomes more complicated the marketing, accounting, advertising, educating habits and methods also change simultaneously. Online shopping is a new developing business, by which customers are able to reach the products on internet as well as sellers can reach to customers in the same way. Besides, shopping online enables customers to find more different kinds of products than shopping in traditional way. It becomes possible to compare products, compare prices and shop from different magazines at the same time. The most visited online food ordering website in Turkey, 'yemeksepeti.com' has shared the user statistics of 2011. According to that, 28 million portion of food was ordered online just in 2011.

Despite the rapid improvement in this sector, many researches are carried out about the main factors that affect the consumers' attitudes against online shopping. Especially the technology acceptance model (TAM) (Davis, 1989; Davis, Bagozzi, and Warshaw, 1989) is considered as conceptual framework. Besides, several factors are added to TAM and their effects are also tested.

2. Research Model And Hypothesis

The theory of reasoned action (TRA) (Ajzen and Fishbein, 1980) and the theory of planned behavior (TPB) (Ajzen, 1985) were born out of examining the relationship between attitude and behavior towards a new introduced action. Technology acceptance model (TAM) is based on these theories and tries to explain and predict the

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acceptance of a new technology among prospective users. TAM puts forward the perceived ease of use and perceived usefullness as two main factors while trying to explain the attitude directly and behavioural intention indirectly towards using a technology. Davis describes perceived ease of use as “the degree that a person believes that using a particular system would be free of effort” and perceived usefullness as "the degree to which a person believes that using a particular system would enhance his or her job performance“ (1989). Both of these factors were examined as the main determinants of attitudes of potential users towards several kinds of actions as web retailing (O'Cass, 2003; Ahn, 2007), online tax filing (Wang, 2003; Fu, 2006), digital libraries (Thong, 2002) and e-learning (Liu, 2003; Roca, 2006). Being inspired by these researches, the first two hypothesis of our research are:

H1: The attitudes of students towards online food ordering vary according to the ease of online food ordering process.

H2: The attitudes of students towards online food ordering vary according to the usefulness online food ordering process.

Rogers (2003) defines innovation in his book as 'an idea, practice, or object that is perceived as new by an individual or other unit of adoption' (p. 551). As there were many definitions of the related term 'innovativeness', Personal Innovativeness in the Domain of Information Technology (PIIT) (Agarwal et al. 1998) can be seen as the exact equivalent term of our innovativeness’. Agarwal defines PIIT as ‘the willingness of an individual to try out any new information technology’ (1998). Lian examined that PIIT positively affects attitudes of customers towards online purchases (Lian et al. 2008). As being inspired by similar researches (Lu et al. 2005; Wang et al. 2006), it is hypothesized that in line with innovativeness, the customers' attitude to order food from internet will vary.

H3: The attitudes of students towards online food ordering vary according to their innovativeness against information technology.

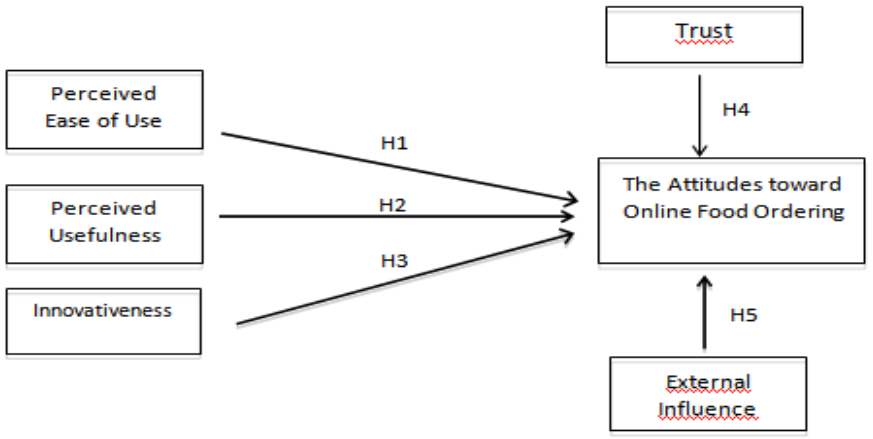
Pavlou (2003) defined trust as “the belief that allows consumers to willingly become vulnerable to Web retailers after having taken the retailers' characteristics into consideration”. Meanwhile, common beliefs about carrying business over the internet has a noteworthy effect on consumers against online purchasing (Gefen and Straub, 2003). According to these definitions, trust forms the basis of consumers' beliefs about the safety of online shopping. Concisely, in this study we mention consumers' trust to customer service quality and reliability of online retailer business. Besides it is referred that trust is one of the key factors that influence customers' attitude towards online shopping. As such it is hypothesized that:

H4: The attitudes of students towards online food ordering vary according to their trust in e-retailers.

Hung claimed that, citizen’s tend to be affected by external and interpersonal influences and social influence is an important determinant of behavior (2006). As a result of his study, a positive effect of external influence on citizens to use e-government services was shown. In our study, positive effect of people around potential customer for online food ordering is meant for external influence.

H5: The attitudes of students towards online food ordering vary according to external influences.

Figure 1: Proposed Model



3. Methodology

A hard copy survey was the predominant measuring device used in our study. The population consist of the students of the Faculty of Economics and Administrative Sciences in Okan University. For all variables in our study we used multiple item (5-point, Likert-type) scales ranging from strongly agree (5) to strongly disagree (1). Convenience sampling method was employed. Data collection was realized as a field survey where the students were requested to fill in the distributed questionnaires without any incentives.

Measure items for the research were selected from prior studies. We tried to use the most commonly used items for each factor. The questionnaire was composed of 28 closed ended questions. The opening questions were asked to see the internet usage frequencey and whether the subject had ever ordered food online, and if so, its quantile. Five items measuring ease and four items measuring usefulness of ordering food online were derived from Davis (1989), Moon (2001) and O'Cass (2003). Three items measuring innovativeness were adopted from Hung et al. (2006). Three items that measure trust were adopted from Flavián and Guinalíu (2006) and another three for external influence were adopted from Taylor and Todd (). Three items for attitude toward online food ordering were adopted from Davis (1989) and Liao (2001). The last three items covered age, sex and current city.

4. Findings

Out of 325 questionnaires, 231 questionnaires were returned, suggesting a 71% response rate. 25 questionnaires were excluded due to a large percentage of missing values. The demographic distribution among items as gender, age and internet usage and online food ordering experience can be analysed from Table 1.

Table 1: Sample profile of survey

Item	Demographics	Number	%
Age	Under 20	**Appendix A.** 18	**Appendix B.** 8.0
	21-23	**Appendix C.** 153	**Appendix D.** 68.3
	24-26	**Appendix E.** 49	**Appendix F.** 21.9
	27-29	**Appendix G.** 4	**Appendix H.** 1.8
	Missing	**Appendix I.** 7	**Appendix J.** 3.0
		Appendix K.	**Appendix M.**
Gender	Female	**Appendix L.** 97	**Appendix N.** 42.0
	Male	**Appendix O.** 125	**Appendix P.** 54.1
	Missing	**Appendix Q.** 9	**Appendix R.** 3.9
Experience of using WWW	Under 2 years	**Appendix S.** 0	**Appendix JJ.** 0
	2-4 years	**Appendix T.** 4	**Appendix KK.** 1.7
	4-6 years	**Appendix U.** 42	**Appendix LL.** 18.2
	Over 6 years	**Appendix V.** 181	**Appendix MM.** 78.4
	Missing	**Appendix W.** 4	**Appendix NN.** 1.7
		Appendix X.	**Appendix OO.**
Average time spent on internet per day	Under 2 hours	**Appendix Y.** 50	**Appendix PP.** 21.6
	2-4 hours	**Appendix Z.** 113	**Appendix QQ.** 48.9
	4-6 hours	**Appendix AA.** 48	**Appendix RR.** 20.8
	Over 6 hours	**Appendix BB.** 16	**Appendix SS.** 6.9
	Missing	**Appendix CC.** 4	**Appendix TT.** 1.7
		Appendix DD.	**Appendix UU.**
The number of times ordered food online	Never	**Appendix EE.** 47	**Appendix VV.** 20.3
	1-5 times	**Appendix FF.** 60	**Appendix WW.** 26.0
	6-25 times	**Appendix GG.** 67	**Appendix XX.** 29.0
	26-50 times	**Appendix HH.** 28	**Appendix YY.** 12.1
	Over 50 times	**Appendix II.** 29	**Appendix ZZ.** 12.6
			Appendix AAA.

Prior to factor analysis, it is required to test if the data is compatible for factor analysis. Firstly, the normality checks all the measured variables were realized by the reviewing the skewness and kurtosis. In addition to this, Barlett's test and Kaiser-Meyer-Olkin (KMO) tests were used to test empirically whether the data were likely to factor well.

Table 2: KMO and Barlett's test

Kaiser-Meyer-Olkin		**.859**
Barlett's Test of Sphericity	Approx. Chi-Square	2264.808
	df	210
	Sig	**.000**

According to KMO test and Bartlett test of sphericity (Table 2), we found value of KMO which is large than 0.6 is in line with the requirements of the principal component analysis. At the same time, accompanied probability in the Bartlett test of sphericity is 0.000, which is less than significant level of 0.05, so we reject the Bartlett Test of sphericity and zero assumption and think they are suitable for principal component analysis.

Furthermore, cronbach's alpha coefficient has been used to assess the internal consistency of the scale. The obtained cronbach's alpha value for 21 items is .904 which indicates that the scale has high internal consistency. Besides we determined the cronbach's alpha reliability for each factor. In General, values>0.7 are considered satisfactory and as shown in Table 3, all values were above the recommended level.

Table 3: Convergent Validity and Internal Consistency Reliability

Variables	Items	Factor Loadings	% of Variance Explained	Cronbach's Alpha
Perceived usefulness	PU1	.729	12.408	.813
	PU2	.720		
	PU3	.790		
	PU4	.624		
Perceived ease of use	PEOU1	.711	15.451	.815
	PEOU2	.788		
	PEOU3	.619		
	PEOU4	.728		
	PEOU5	.706		
Trust	TR1	.806	10.883	.825
	TR2	.820		
	TR3	.757		
Innovativeness	INN1	.821	8.126	.761
	INN2	.798		
	INN3	.636		
Attitude	ATT1	.665	11.154	.887
	ATT2	.760		
	ATT3	.838		
External Influence	EXT1	.736	10.155	.738
	EXT2	.762		
	EXT3	.765		
Total:			69.691	

In addition to consistency test, a confirmatory factor analysis was conducted to test the convergent validity of each construct. Although there is no strict boundaries for the required levels of factor loadings, the commonly accepted values can ben seen in Table 4 (Moore and Benbasat, 1991). This analysis showed that most items had factor loadings higher than 0.71.

Table 4: Factor Loading Acceptance Table

Comment	Factor loading value
Unacceptable	< 0.45
Acceptable	< 0.55
Good	< 0.63
Very good	< 0.71
Perfect	< 1.0

In order to find the one-sided relationship of each independent factor with the dependent factor (attitude) and test our hypothesis, multiple regression analysis was performed by using IBM SPSS version 19. As a result of the test applied (Table 5), it can be seen that perceived ease of use, perceived usefulness, trust, external-influence and innovativeness were statistically significant predictors of each country's mortality rate. $F = 43.197$, $p < .001$, $R^2=.509$ (ANOVA). Although a tolerance value under .2 usually means the variable is correlating with other independent variables and should not be included, all of our factors seem significant and not correlating.

Table 5: Multiple Regression Results

Independent Factors	Tolerance	B	β	*p*
Perceived ease of use	.934	.284	.094	.042
Perceived usefulness	.695	.457	.381	.000
Trust	.754	.156	.123	.029
External influence	.800	.310	.267	.005
Innovativeness	.825	.199	.151	.000
Dependent Factor: Attitude	***Enter Method Used**			

5. General Discussion

Given the increased use of the online shopping, the study aimed to study the online food ordering in Turkey. Specifically, the purpose of this study was to empirically investigate the factors that affect the attitudes of university students towards ordering food by internet.

According to the analysis of the data gathered by questionnaire university students, all of our six hypothesis are supoorted. Despite the fact that this study gives us an idea about the factors that have influence on attitudes of potential customers for the latter studies, the main limitation is the employment of a student sample which prevents the generalizability of the results due to its lack of representativeness. Therefore, the further studies should employ representative samples to replicate the confirmed relationships in the model.

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