



What determines Turkish customers' acceptance of internet banking?

Acceptance of internet banking

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Abstract

Purpose – The purpose of this article is to provide an insight into the determinants of customers' internet banking (IB) acceptance. Therefore, it attempts to address a research need for extending the technology acceptance model (TAM) by adding contextual factors for IB case.

Design/methodology/approach – A research model reflecting the effects of perceived risk (PR), perceived playfulness (PPL) and perceived behavioral control (PBC) on TAM constructs is proposed. The partial least squares (PLS) procedure is used to analyze 161 cases collected from individual IB users through a web-based survey.

Findings – The results indicate that perceived usefulness (PU) and perceived ease of use (PEOU) are immediate direct determinants of customers' attitudes towards using IB (ATT). PU, PR and ATT determine the large proportion of behavioral intentions to use IB (BI). Although PPL positively influences only PEOU, PBC exerts positive direct effects on PEOU and PU and indirect effects on PU and ATT.

Research limitations/implications – The study findings were obtained from the single snapshot research, the small data set covering only active e-mail users and the participants' self-reports about BI. Therefore, the future research should carry a longitudinal nature to show the temporal change effects, remedy the possibility of self-selection bias with a broader research sample and validate the BI usage externally instead of self-reported BI.

Originality/value – This study supplies the valuable information for researchers and practitioners about the effects of PR, PPL and PBC on IB adaptation behavior of Turkish customers. Furthermore, the study reveals that extended TAM could be used to provide a solid theoretical foundation of IB acceptance case.

Keywords Virtual banking, Risk analysis, Least square approximation, Turkey

Paper type Research paper

1. Introduction

Internet banking (IB) has been perceived as a potentially feasible alternative distribution channel by Turkish commercial banks since 1997 due to increasing computer literacy, deregulation in the financial sector, the rapid diffusion of electronic commerce, changing customer demands for innovative financial products (services), and strong commitments to reduce operating costs and create customer convenience. Both banks and customers have seemed to enjoy the distinct advantages of IB, such as retaining a profitable customer base, lowering transaction costs, supporting customer relations, extending the market area, banking with round-the-clock convenience,

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decreasing the dependence on a branch network and saving time and money. Although the customer take-up of IB appeared to be very slow, many Turkish commercial banks of all sizes found it irresistible to invest huge amounts in online banking because of the low cost of attracting new technology-oriented consumers and retaining existing innovation-demanding customers during the past two decades. Recently, however, these banks have realized that even converting regular internet users into IB customers remains an unsolved issue, let alone capturing average retail banking customers to fulfill the online banking provisions (Akıncı *et al.*, 2004; Özkan, 2003).

Despite the recent proliferation of the internet in Turkey, the adoption rate of internet banking (IB) among internet users has remained well behind early expectations. Although two million people (50 percent of four million Turkish internet users) were forecasted to be using IB by 2003, the actual number of IB users appeared to be between 1 and 1.2 million (nearly 30 percent of internet users) in 2003 (Akıncı *et al.*, 2004; Çelik, 2002; Özkan, 2003). Another source estimated that the share of Turkish internet users adopting IB would increase from 40 percent in 2005 to 45 percent in 2007. However, there were an estimated 16 million internet users in Turkey in September 2007, of which around 5.5 million (approximately 34 percent of internet users) were believed to regularly use online banking services provided by 26 of the 33 top retail banks (İnternet Bankacılığı İstatistikleri, 2007). On the other hand, the number of active IB accounts in Turkey grew annually by 68 percent, increasing from 150,000 in 2000 to 5.5 million in 2007 (Higgs, 2000). Although this shows that IB has experienced strong and sustained growth since its inception, Turkey, in comparison, has a lower IB penetration rate than that of many European countries. For instance, in the case of the UK, approximately 16.9 million customers (one-third of the UK's adult population) used online banking services in 2006. Germany, however, was expected to have two million more IB customers than the UK in the same year. Furthermore, the Nordic countries have the highest IB penetration rate (43 percent of Nordic Region population) in Europe. Therefore, research on the acceptance of IB by the individual customers in Turkey has been required to enhance our understanding of how their particular beliefs or motives affect their utilization of IB services.

2. Research background and hypotheses

The theoretical grounding for this research derives from the technology acceptance model (TAM). TAM, proposed by Davis (1989) to explain and predict end-user acceptance of information systems (IS) has been validated across a broad range of research settings on different information technology (IT) applications over time. TAM is an extension of the Theory of Reasoned Action (TRA), developed by Fishbein and Ajzen (1977) to describe the psychological determinants of behavior. According to TRA, an individual's performance of a specific behavior is determined by his/her behavioral intentions (BI), which are a function of individual attitudes (ATT) (the person's feelings that performing the behavior is good or bad) and subjective norms (the person's beliefs that certain individuals or groups approve or disapprove of performing the behavior) (Fishbein and Ajzen, 1975, p. 301). Based on TRA, TAM assumes that two personal beliefs about the ease of use (PEOU) and usefulness (PU) of the computer system influence ATT, which in turn lead to BI and then generate behavior to use the system (Davis *et al.*, 1992; Venkatesh and Davis, 1996). Within TAM, PU is the major factor having a direct effect on BI, determining a large

proportion of ATT and mediating the effects of PEOU on BI. PEOU, however, is the secondary factor, having a direct influence only on ATT towards system use (Karahanna and Straub, 1999).

A significant body of research provides empirical support to show that PU and PEOU (except for ATT) play a critical role in predicting and determining the usage behavior in both voluntary (e.g. internet and e-mail) and mandatory (e.g. office technologies and intranet) technology acceptance situations (Adams *et al.*, 1992; Dishaw and Strong, 1999; Horton *et al.* 2001; Igbaria *et al.* 1996; Karahanna and Straub, 1999; Lin and Liu, 2000; Moon and Kim, 2001; Teo *et al.*, 1999; Venkatesh *et al.*, 2003; Venkatesh and Davis, 2000). Although some evidence exists showing that the linkage of ATT and BI as proposed in TAM is problematical, much of the research on the adaptation of electronic commerce (EC) forms, including IB, reports the significant relationship between ATT and BI (Hendrickson and Collins, 1996; Gefen and Straub, 1997; Igbaria *et al.*, 1995, 1997; Lai, 1994; Shih, 2004; Szajna, 1996; Suh and Han, 2002; Teo *et al.*, 1999; Venkatesh and Davis, 2000). Recently, as EC has emerged as a new form of IS, researchers have extended the boundaries of TAM to examine various EC-related contexts, including EC websites (Chen *et al.*, 2002), web retailing (Cheng *et al.*, 2005; Shih, 2004), mobile commerce (Yang, 2005), WAP services (Hung *et al.*, 2003) and IB (Suh and Han, 2002). Furthermore, Çelik and Ipçioğlu (2006) show that the TAM structure is sufficient to explain internet acceptance behavior in the Turkish culture. As such, it is hypothesized that:

- H1. PEOU is likely to have a positive effect on PU.
- H2. PU is likely to have a positive effect on ATT.
- H3. PEOU is likely to have a positive effect on ATT.
- H4. PU is likely to have a positive effect on BI.
- H5. ATT is likely to have a positive effect on BI.

Although the results of many empirical studies have proven the validity of TAM in both voluntary and mandatory acceptance cases, it has consistently explained only a fraction of usage variance (between 4 percent and 45 percent) in those studies (Adams *et al.*, 1992; McFarland and Hamilton, 2004; Igbaria *et al.*, 1995; Venkatesh *et al.*, 2003). Furthermore, there some evidence exists that the original TAM constructs explain less than 45 percent of intention and usage variance in an e-commerce related context, including IB (Chen *et al.*, 2002; Suh and Han, 2002). It is therefore recommended to incorporate the other underlying behavioral constructs and external variables reflecting the user's task environment into TAM to remedy the problem (Dishaw and Strong, 1999; McFarland and Hamilton, 2004). The first addition to TAM was the perceived behavioral control (PBC) construct, taken from the Theory of Planned Behavior (TPB). TPB extended TRA by adding PBC to account for personal perceptions of the availability of knowledge, resources, facilitating conditions and opportunities to perform the behavior (Ajzen, 1991; Ajzen and Driver, 1991). PBC, conceptualized as internal control (e.g. self-efficacy) and external control (e.g. facilitating conditions), has been reported to influence BI and usage behavior both directly and indirectly over TAM beliefs (Agarwal and Karahanna, 2000; Hong *et al.*, 2002; Igbaria *et al.*, 1995, 1997; Mathieson, 1991; Taylor and Todd, 1995a, b; Venkatesh,

2000). Furthermore, Keen *et al.* (2004) observed that PBC was the most important attribute for e-retailing customers to prefer online shopping. Based on the discussion above, the following hypotheses are proposed:

H6. PBC is likely to have a positive effect on PU.

H7. PBC is likely to have a positive effect on PEOU.

H8. PBC is likely to have a positive effect on BI.

Apart from TRA and TPB, general motivation theory asserts that a specific outcome behavior is evoked by intrinsic and (or) extrinsic motivators. While intrinsic motivators pertain to the perceptions of emotional treats (e.g. pleasure and satisfaction) acquired by performing a behavior, extrinsic motivators relate to the perceptions of tangible rewards (e.g. money or work promotion) or the goal achievements as a result of performing behavior (Childers *et al.*, 2001; Vallerand, 1997). In TAM, although PU solely represents the extrinsic motivation, PEOU partially stands for intrinsic motivation (Venkatesh, 2000; Venkatesh and Davis, 2000). Thus, it has been criticized because of its extrinsic focus (Moon and Kim, 2001). On the other hand, people apparently use computers and the internet, in particular EC applications, for pleasure and enjoyment as well as for work (Babin *et al.*, 1994). In relating intrinsic motivation to general internet and e-retailing usage contexts, the construct of flow – i.e. a state of intense concentration, ultimate enjoyment and self-unconsciousness – has been successfully applied and operationalized in prior acceptance research (Hoffman and Novak, 1996). Based on flow, TAM was extended by adding perceived playfulness (PPL), described as the degree of pleasant feeling experienced with the interaction of a system (Davis *et al.*, 1992; Moon and Kim, 2001). It was asserted that higher levels of PPL cause a willingness to spend more time on the system, which in turn, decreases the user's effort expectancy and a positive perception of system efficiency that, in turn, increases the user's perception of system value (Webster and Martocchio, 1995; Moon and Kim, 2001; Venkatesh, 2000). Much, although not all, research supports empirically that PPL has a positive direct effect on an internet user's and an online shopper's ATT, PU and PEOU (Cheng *et al.*, 2005; Maignan and Lukas, 1997; Moon and Kim, 2001). On the other hand, Agarwal and Karahanna (2000) argued that PPL is the antecedent of PU and PEOU in their related study. In accordance with the empirical findings above, the following hypotheses are formulated:

H9. PPL is likely to have a positive effect on PU.

H10. PPL is likely to have a positive effect on PEOU.

In the consumer behavior literature, it has been well documented that consumers tend to consider all the uncertainties and possible adverse outcomes when they make their product/service purchase decisions (Mitchell, 1999). In other words, perceived risk (PR) significantly influences consumers' purchase decisions, in which is involved the probability of unpredictable, unpleasant and costly consequences connected with those decisions. Evidence exists that PR is an important determinant of online purchasing behavior because the internet is an inherently risky environment due to the absence of personal contact, physical product (service) evaluation, warranties or contracts, solid transaction security and privacy protection (Featherman and Pavlou, 2002; Hoffman

et al., 1999; Jarvenpaa *et al.*, 2000; Montoya-Weiss *et al.*, 2003; Suh and Han, 2002). Therefore, with the proliferation of EC and IB, TAM has recently been extended by adding the PR construct to remedy its lack of task environment focus. PR could be defined as the perceived possibility of exposure to adverse consequences in the persuasion of desired outcomes which, in turn, result in psychological, social, time, privacy, financial and performance losses by using IB (Cunningham *et al.*, 2005). Extensive research presents a valuable argument that PR negatively affects ATT toward and BI of adopting IB not only in Western countries but also in Eastern cultures, such as Turkey (Akıncı *et al.*, 2004; Altıntaş and Gürsakal, 2007; Jarvenpaa and Todd, 1997; Liao and Cheung, 2002; Littler and Melenthiou, 2006; Polatoglu and Ekin, 2001). Furthermore, it was confirmed by empirical studies that PR, decomposed into performance, time, privacy and financial risk facets, has an inhibiting influence on TAM's criterion variables (Cheng *et al.*, 2005; Featherman and Pavlou, 2002; Yiu *et al.*, 2007). Based on the discussions and the postulations above, the following hypotheses are proposed:

- H11. PR is likely to have a negative effect on BI.
- H12. PR is likely to have a negative effect on ATT.
- H13. PR is likely to have a negative effect on PEOU.
- H14. PR is likely to have a negative effect on PEOU.

Based on the research hypotheses, a research model was formed as shown in Figure 1.

3. Research design and methods

In order to reach active IB users, a web-based survey was employed. The survey interface was designed using “Quask Form Artist SE” to increase the usability and

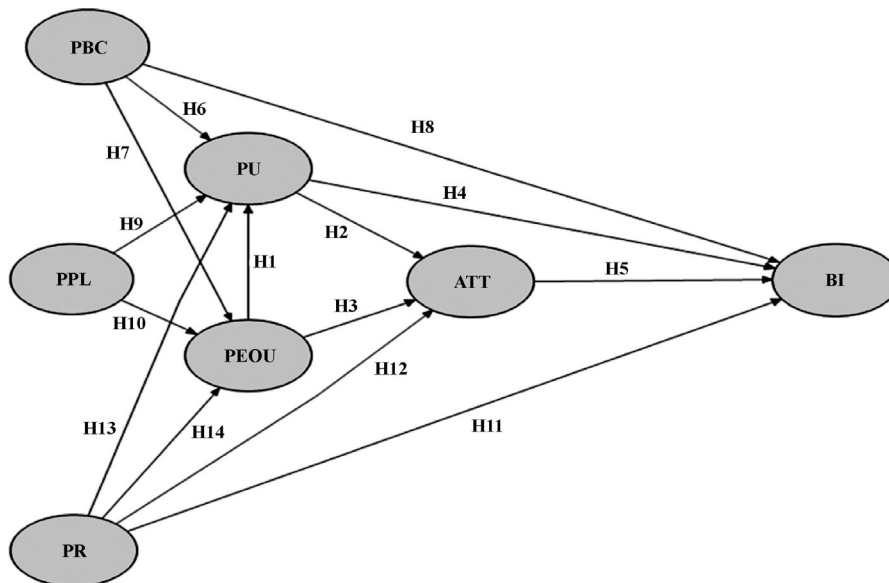


Figure 1. Research model

dependability of the instrument. An e-mail message including the research invitation was sent to 1,300 Turkish internet users who had active e-mail accounts, randomly selected from "Turkey E-Mail List".

A total of 213 surveys were collected from the participants, of which 161 were found to be usable in the data analysis. The return rate was 12.5 percent based on a total of 1,300 surveyed internet users. The sample characteristics are provided in Table I. As for the data analysis, the "Smart PLS" path modeling software was used.

The survey instrument contained 38 measurement items related to seven constructs of the research model. All items were adopted from previously validated technology acceptance studies and modified properly for the IB adaptation case to ensure the content validity of the instrument. The items were gathered from Agarwal and Karahanna (2000), Chen *et al.* (2002), Cheng *et al.* (2005), Chau and Hu (2002), Davis (1989), Featherman and Pavlou (2002), Suh and Han (2002), Taylor and Todd (1995a, b), Venkatesh (2000) and Venkatesh *et al.* (2003). BI, instead of self-reported usage, was employed to measure the subjects' internet acceptance levels. Finally, the respondents indicated their agreement or disagreement with the survey instrument using a seven-point Likert scale.

Measure	Value	Frequency	Percentage
Gender	Male	116	72
	Female	45	28
Age	Less than 25	31	19
	26-35	84	53
	36-45	34	21
	46-55	9	6
	Over 56	2	1
Monthly income (YTL)	Less than 499	11	7
	500-999	37	23
	1,000-1,499	44	27
	1,500-1999	30	19
	Over 2,000	38	24
IB access in a month	Fewer than five times	99	61.4
	5-10 times	53	32.8
	11-15 times	3	1.9
	Over 15 times	6	3.9
IB usage in a month (hours)	Less than five	132	82.1
	5-10	24	14.7
	11-15	3	1.9
	16-20	1	0.6
	Over 20	1	0.6
Reason to use IB	Money transfer	68	42
	Account information	51	32
	Bill payment	39	24
	Information search	3	2

Table I.
Selected characteristics of
the sample

4. Data analysis and results

4.1 Reliability and validity

Construct reliability reflects the internal consistency of the scale items (manifest variables; MV) measuring the same construct (latent variables; LV) for the collected data (Straub, 1989). Construct reliability of the scale was assessed by computing Cronbach's α for each LV. As can be seen in Table II, the α coefficients for each LV were above 0.88, exceeding the common threshold value (0.70) recommended by Agarwal and Karahanna (2000). In addition, the main portion of variance in each LV

Constructs (LV)	Initial items	Final items	Variable (MV)	Factor loadings	Cronbach's α	Variance extracted
PU	6	6	PU1	0.844	0.919	0.65
			PU2	0.878		
			PU3	0.849		
			PU4	0.767		
			PU5	0.687		
			PU6	0.813		
PEOU	5	5	PEOU1	0.759	0.908	0.67
			PEOU2	0.798		
			PEOU3	0.868		
			PEOU4	0.792		
			PEOU5	0.856		
PBC	5	5	PBC1	0.827	0.914	0.68
			PBC2	0.845		
			PBC3	0.910		
			PBC4	0.724		
			PBC5	0.812		
PPL	5	5	PPL1	0.798	0.924	0.67
			PPL2	0.852		
			PPL3	0.874		
			PPL4	0.901		
			PPL5	0.761		
			PPL6	0.714		
PR	6	5	PR1	0.804	0.888	0.67
			PR2	0.891		
			PR3	0.879		
			PR4	0.679		
ATT	5	4	ATT1	0.901	0.921	0.75
			ATT2	0.939		
			ATT3	0.910		
			ATT5	0.681		
BI	5	4	BI1	0.873	0.854	0.69
			BI2	0.935		
			BI3	0.923		
			BI4	0.818		

Table II.
Reliability and validity
measures (PLS results for
research model)

can be explained by MVs, and each LV significantly contributes to the overall variance explained. Thus, it was determined that the scale was reliable or internally consistent.

Factor analysis and the correlation matrix approach were both applied to examine the convergent and discriminant validity (Igarria *et al.*, 1995). The partial least squares procedure (PLS) was followed to calculate factor loadings and seven LVs were extracted, exactly matching the number of LVs hypothesized before. The percent of cumulative variance in these seven LVs was approximately 75 percent, and average variance extracted (AVE) from each LV exceeded the 0.5 threshold. Moreover, MVs intended to measure the same LV exhibited distinctly higher factor loadings (ranging between 0.65 and 0.94) on a single LV than on other LVs. Further in-depth analysis on the correlation matrix revealed that the correlations between the MVs intended to measure the same factor were significantly higher than between those designed for different factors. Also, it is suggested that AVE (or square root of AVE) be larger than the correlations between the LV and other LVs to assess the discriminant validity (Agarwal and Karahanna, 2000). As seen in Table III, all AVEs (the italicized numbers on the diagonal) were larger than the inter-construct correlations (the numbers off the diagonal). Thus, it was concluded after the discussion above that IB adoption is explained sufficiently by the revealed LV structure (convergent validity), and this structure includes all unique MVs (discriminant validity).

4.2 Results of hypothesis testing

The PLS technique was also used to confirm the hypothesized relations between constructs in the research model. PLS has been increasingly preferred for complex modeling among researchers in the technology acceptance field instead of multiple regression or structural equation modeling because of its statistical ability to deal with the research data having small sample size, non-normality problems, missing values and multicollinearity (Compeau and Higgins, 1995; Chin and Gopal, 1995). As a LV modeling technique, the PLS approach resembles the regression method. On the other hand, unlike regression, PLS simultaneously measures the manifest-latent variable relations (measurement paths-factor loadings) and the relationship between latent variables proposed in the research model (structural paths – the path coefficients) (Igarria *et al.*, 1997). The composite reliability of the measures is assessed by evaluating the measurement paths (as performed previously) and the calculated coefficients of structural paths proposed in the research model are used to compose the structural model (McFarland and Hamilton, 2004). Path coefficients and explained

Table III.
Inter-construct
correlations

	ATT	BI	PBC	PEOU	PPL	PR	PU
ATT	<i>0.75</i>						
BI	0.65	<i>0.69</i>					
PBC	0.60	0.48	<i>0.68</i>				
PEOU	0.60	0.49	0.55	<i>0.67</i>			
PPL	0.30	0.23	0.37	0.38	<i>0.67</i>		
PR	-0.24	-0.37	-0.23	-0.24	-0.13	<i>0.67</i>	
PU	0.64	0.65	0.58	0.62	0.35	-0.17	<i>0.65</i>

variances in the structural PLS model are interpreted as standardized β weights and R^2 values, respectively, in the regression models (Agarwal and Karahanna, 2000).

The significances of the direct and indirect paths within the research model were tested by using a bootstrap resample procedure (MacKinnon *et al.*, 2002, 2004). As suggested by Preacher and Hayes (2004), confidence intervals for proposed direct and indirect effects were obtained by using a sample size including 400 cases. In addition, an Aroian test was conducted separately just to reevaluate the significance of mediation effects found after bootstrapping (Baron and Kenny, 1986; Preacher and Hayes, 2004). After performing the PLS analysis, as seen in Figure 2, the structural model was obtained. The assessment of overall model was provided by the communality coefficients of MVs, which were over 0.59. McFarland and Hamilton (2004) suggest that these coefficients be over 0.30 to consider model fit to be acceptable. Figure 2 provides the results of PLS analysis. As seen in Figure 2 and Table IV, neither direct nor indirect relations between PBC and BI, PPL and PU, PR and PU, PR and PEOU, and, PR and ATT paths could be observed. Therefore, the *H8*, *H9*, *H12*, *H13* and *H14* were rejected because their β coefficients and *t* scores regarding the β values were below the acceptable level (*t* scores should be a minimum 1.68 at $\alpha = 0.10$, 1.96 at $\alpha = 0.05$, and 2.56 at $\alpha = 0.01$ levels).

As can be seen in Table IV, PU and PEOU are the main determinants of ATT postulated in previous studies. Almost 63 percent of variance in ATT is explained by those two TAM beliefs. However, PU exerts stronger positive influence on ATT than PEOU does, as indicated by β coefficients of 0.633 ($p < 0.001$) for PU and 0.186 ($p < 0.010$) for PEOU. Also, PU fully mediates the effects of PBC ($\beta = 0.205$, $p < 0.001$) and PEOU ($\beta = 0.265$, $p < 0.001$) on ATT. Interestingly, the indirect

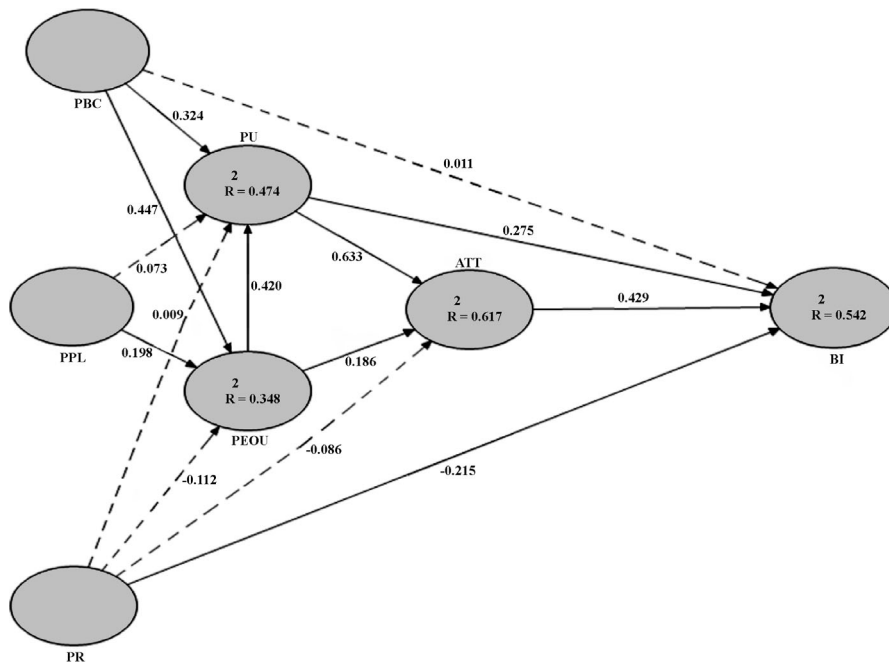


Figure 2. PLS structural model

Table IV.
Summary of hypothesis testing

Constructs	PU		PEOU		ATT		BI	
	Indirect	Direct	Indirect	Direct	Indirect	Direct	Indirect	Direct
PBC	0.188*	0.324**	-	0.447***	0.205***	-	0.089 ^{NS}	0.011 ^{NS}
PPL	0.083 ^{NS}	0.073 ^{NS}	-	0.198*	0.037 ^{NS}	-	-	-
PR	-	-0.009 ^{NS}	-	-0.112 ^{NS}	-	-0.086 ^{NS}	-	-0.216***
PU	-	-	-	-	-	0.633***	0.272***	0.275*
PEOU	-	0.420***	-	-	0.265***	0.186*	0.120*	-
ATT	-	-	-	-	-	-	-	0.429***

Notes: Values in parentheses are *t* values, ^{NS} insignificant; * significant at 0.10; ** significant at 0.05; *** significant at 0.01

impact of PEOU on ATT is significantly strong in magnitude compared to its direct effect. On the other hand, PEOU has a significant positive effect on PU ($\beta = 0.420$, $p < 0.001$) implying that PU also mediates the effects of PEOU on BI ($\beta = 0.120$, $p < 0.010$). Finally, the significant direct and indirect effects of PU on BI seems to have about the same magnitude ($\beta = 0.275$, $p < 0.010$ and $\beta = 0.272$, $p < 0.001$). Therefore, *H1*, *H2*, *H3* and *H4* are all confirmed.

BI is predicted largely by three statistically significant direct paths from PU ($\beta = 0.275$, $p < 0.010$), ATT ($\beta = 0.429$, $p < 0.01$) and PR ($\beta = -0.216$, $p < 0.001$). Thus, *H5* and *H11* are supported by those analysis results. Furthermore, PU and PEOU exert indirect impacts on BI via ATT and PU, respectively, besides the direct effects of mentioned constructs. As seen in Figure 2, these direct and indirect effects together explain 63 percent of the variance in BI. Table IV also presents that one of the main determinants of PU is PBC having a direct ($\beta = 0.324$, $p < 0.05$) and indirect ($\beta = 0.188$, $p < 0.010$) influence on the construct. Both PEOU and PBC explain 47 percent of the variance in PU. As shown in Table IV, any indirect impact of PPL on PU via PEOU could not be observed. Moreover, PBC and PPL are significantly related to PEOU. However, the effect of PBC on PEOU ($\beta = 0.447$, $p < 0.001$) is stronger than that of PPL ($\beta = 0.198$, $p < 0.010$). The corresponding constructs explain approximately 35 percent of the variance in PEOU. Thus, *H7* and *H10* are both confirmed.

5. Discussion

The results of this study provide valuable insights into the underlying contextual factors of IB adaptation behavior for researchers and practitioners. Also, this study supplies information about the effects of those factors on the adoption behavior of Turkish IB customers. The starting point of the study was TAM. TAM was extended by adding external factors (PPL, PBC and PR) to increase its contextual focus and improve its explanatory power. The research reveals that TAM could be used to provide a solid theoretical foundation of IB acceptance case. As postulated in TAM studies, the belief-attitude-intention-usage stream is still effective in predicting the IB utilization of a Turkish customer.

The results show that although PEOU has a fairly significant effect on ATT, PU almost determines ATT by itself. This is consistent with the findings of previous studies (Davis, 1989; Davis *et al.*, 1992; Gefen and Straub, 1997; Taylor and Todd, 1995a; Venkatesh and Davis, 2000). Furthermore, evidence exists to support that PEOU has a lower effect on ATT than PU in e-retailing, and particularly in IB contexts (O'Cass and Fenech, 2003; Suh and Han, 2002). Several explanations could be stated for this finding. In this study, it could be implied that user experience in IB possibly decreases the effort expectancies of the customers because the research data includes a sample of active IB users. Much, although not all, research provides empirical support for this implication that PEOU becomes insignificant with increased familiarity with the system (Agarwal and Prasad, 1999; Liaw, 2002; Szajna, 1996; Venkatesh, 1999). On the other hand, PEOU was found to be a more salient determinant affecting PU in addition to PBC. This finding seems to be consistent with the results of prior studies and suggests that low evaluation of PEOU by active IB users increases its saliency in determining PU or the pragmatic value of IB (Chan and Lu, 2004; Venkatesh and Morris, 2000). As suggested by Suh and Han (2002), the indirect effects of PEOU via PU

on attitudes toward using and intentions to use IB were also confirmed. Therefore, IB professionals should consider increasing the attractiveness of IB by creating user-friendly, easy-to-learn and informative interfaces for potential adopters and providing accessible IB sites, fast page downloads, short transaction times, a wide variety of financial products/services, and frequent-user advantages for active users.

The study results show that, while PPL exerts a fairly significant influence only on PEOU, it does not have any effect on PU at all. This finding is consistent with the postulations of previous studies (Moon and Kim, 2001; Venkatesh, 1999, 2000). Venkatesh's (2000) study highlights that higher levels of PPL increase the user's intrinsic motivation, which in turn causes him/her to underestimate the system complexity and perceive system usage as being effortless. Also, Hackbarth *et al.* (2003) conclude that experience gained with the system positively influences PPL, which, in turn, inhibits the user's perception of the system's complexity. The postulations and discussions above are the possible explanations of the effect of PPL on PEOU. On the other hand, the finding of this study about the insignificance of the influence of PPL on PU contrasts with Barua and Whinston's (1996) argument that higher levels of PPL improve the perception of system efficiency and increase the perceived value of system usage. One possible explanation for this contradiction could be that IB usage is a more goal-oriented behavior than that of using computer systems and shopping online. Therefore, IB consumers consider extrinsic motives (PU) and intrinsic motives (PPL) separately to decide IB utilization. Therefore, when creating an IB website, practitioners should consider a presentation format that facilitates information processing, improves interactive speed, provides a sense of challenge, stimulates usage enjoyment and supports navigational control.

Another interesting finding of this study is that the effect of PBC on BI is insignificant. It is not consistent with Taylor and Todd's (1995a) study validating the significant influence exerted by PBC on BI. However, there is no consensus among the reports of previous studies about the influence of PBC on BI. For example, Mathieson (1991) and Dishaw and Strong (1999) conclude that extending the original TAM by adding PBC does not contribute to its explanatory power. The basic explanation for this situation could be the inhibiting effects of user experience on PBC. As noted earlier, the research sample includes experienced IB users. Also, Mathieson (1991) supports this view by stating that user perceptions of system control decrease when they become more aware of the system functions, available knowledge about the system, acquirable resources to use the system and the opportunities to reuse the system. Moreover, as suggested by Lassar *et al.* (2005), active IB users perceive IB as a natural extension of their online world. Therefore, although they appreciate the control and convenience of IB, they do not really view its usage as a challenging and exciting activity. On the other hand, the direct and indirect effects of PBC on PU, PEOU and ATT indicate that it still determines the attitudes toward using IB. Thus, practitioners should give an extra attention to prevent IB users from consequently experiencing access difficulties, system crashes, drop outs, service delays and system malfunctions to create a positive control sense over the IB system and in turn, positive attitudes toward IB usage (Yakhlef, 2001).

PR was found to fairly significantly affect BI. This is consistent with the findings of previous studies. For example, Featherman and Pavlou (2002) reported that the effect of PR on BI was almost insignificant. They explained this situation by the indirect

effect of PEOU on BI, which inhibits PR's negative influence on BI. In this study, PEOU could possibly reduce the negative consequences of consumers' performance uncertainty and risk perceptions by influencing BI indirectly over PU. Also, any effect of PR on TAM's criterion beliefs could not be observed in this study. However, this is not consistent with the results of previous studies performed on e-commerce and IB consumers (Featherman and Pavlou, 2002; Yiu *et al.*, 2007). For example, Barua and Winston (1996) argued that the lower degree of PPL would decrease the consumer concerns about the investment cost for the system, which, in turn, would increase their perceptions of system usage value. On the other hand, Cheng *et al.* (2005) could not observe any effects of PR on PU and PEOU in the IB case. One possible explanation could be that today's customers preferring EC channels are much more technology-orientated than customers in the past. Also, the new advancements in the security futures of EC and especially IB sites could decrease the security/privacy concerns of online customers. On the other hand, despite its fairly significant effect on BI, the results also show that PR could be one of the obstacles for IB adoption, and therefore its adverse effects should not be underestimated by practitioners. Nevertheless, recent media reports about increasing fraudulent activities (identity theft, phishing attacks and unauthorized access to accounts, for example) on the internet could trigger and increase the risk concerns of IB customers. IB professionals should consider alleviating these concerns by improving authentication processes, protecting passwords, supplying sufficient information about site security, giving unconditional loss guarantees, providing accessible customer service and educating customers.

6. Limitations and research implications

The limitations of this study are five-fold. First, the study findings and implications presented here were obtained from a single study utilizing a snapshot research approach. This reduces the ability of this study to reflect the temporal changes in the research constructs, especially when IB experiences increase. Thus, future research about this subject matter should be of a longitudinal nature to clarify the effects of temporal changes. Second, self-selection bias could be a problem because only internet users with an active e-mail account were used in the data collection process. Therefore, future studies should utilize a sample including IB users who do not have e-mail accounts. Also, researchers should pay extra attention to collecting data from both inexperienced and experienced IB users. This will remedy the bias and help researchers to better understand the IB acceptance process. Third, the intentions of the research participants to use IB were measured through self-reports in this study. Although some prior studies on technology acceptance provide evidence about the strong correlation between self-reports and actual system usage (e.g. Taylor and Todd, 1995b), future research efforts should be conducted to validate usage externally. Fourth, future studies should extend the TAM by adding more external task-specific constructs to increase its predictive power in the IB context. Finally, since the sample size in the present study is relatively small, the generalizability of the study results to a more general Turkish IB customer segment may be somewhat limited. However, some mitigating factors suggesting that the results could be generalized to other individual IB customers should be considered. First, there is no apparent reason to believe that the study participants are inherently different from other individual Turkish IB customers

at the same experience levels in terms of their perceptions of and attitudes towards IB. Second, since the participants have experience with IB, their perceptions and attitudes about IB are well-formed and crystallized. Finally, the proposed IB acceptance model shows a reasonably good fit with the collected data and it exhibits a satisfactory power to explain the phenomenon of interest. On the other hand, a follow-up research study would be fruitful to minimize the generalizability issue by using a broader random sample representing the whole population of Turkish IB customers. Therefore, offline surveys should be performed complementarily in conjunction with online surveys to collect representative samples by prospective researchers because many Turkish IB customers seem to be reluctant to supply any information on the internet.

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