

The Importance of Individual Technology Factors for Adoption of Internet Banking

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Abstract

The main objective of this study is to find the factors that motivate customers to adopt Internet banking services. It is concerned with an empirical investigation of individual factor technology that could predict successful IBSA. Survey method is used questionnaires are administered on 535 persons in public university staffs already using internet banking services. The findings reveal that individual factors technology is high significant (IFT). It shows four significant relationships between Internet technology literacy toward internet banking adoption ($\beta=.466$, $T=5.672$, $P<.000$); Resistance to change toward internet banking adoption ($\beta= -0.118$, $T=2.262$, $P<.024$); Risk of technology toward internet banking adoption ($\beta=-0.125$, $T=3.838$, $P<.000$) and Anxiety of technology toward internet banking adoption ($\beta=-0.172$, $T=4.821$, $P<0.000$). The results are discussed in the context of internet banking adoption / actual usage.

Index Terms- Individual factors technology, Internet technology literacy, SEM

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INTRODUCTION

In the recent time, the rapid diffusion of internet has brought a radical change in delivery of financial services. Consequently, this has also made usage of internet banking to be indispensable especially with the recent high rate of competition among banks globally. Internet banking refers to web based financial services being rendered by banks to their numerous customers. The ubiquitous and rapid increase in the availability information and communication technologies (ICTs) has equally influenced the way banks are currently serving their customers (Hoehle et al., 2012). Globally, banking organizations are the largest users of IT while they equally largest amount on upgrading IT facilities.

Steady and advanced economic growth and financial systems and economic growth are essentially connected. In fact, empirical research has shown that countries with well-developed financial systems often grow very fast. This is obvious as resources that are prudently and effectively distributed by the financial system can boost economic growth; increase rate of production, give equal opportunity, and decrease rate of poverty (World Bank, 2012; Alsabaah 2014; CBI, 2012). In addition, it is very essential for job creation, encourage foreign and local investment, and accelerate technology sector development which can lead to economic growth and development (Report of U.S.A. Agency for International Development, 2009).

In view of the above, Jasim and Mubark (2010) argued that technological factor such as small number of internet users (only 9%) is responsible for the decline of customers' adoption of IBS (Report of United Nations ESCWA, 2010, p.19). This therefore indicates that person are not competent in the usage and applications of internet technology with regards to IBS (Alhammadany & Heshmati, 2011b, p. 1). Based on this therefore, it sounds very logical that researchers should study those individual technological factors that can impact IBSA (Shendy, 2011). In this regard, Ezzi, (2014) argues that in view of the stated challenges, and other factors such as poor perception and lack of adequate technological skills, the tendency that adoption of internet banking in Gulf countries generally may continue to decline is very high. Importantly, these reasons might continue to hamper the adoption IBS because the level of Individual factors technology are suboptimal in these countries

LITERATURE REVIEW

Personality or Individuality is a concept that describes the affective and cognitive attributes of individuals which assist the individual in adjusting certain events, situations and people which they encountered in the course of their life (Abushanab et al., 2010; Zmud, 1979). Dillon and Watson (1996) while exploring individual differences regarding human computer interaction and user analysis reached a conclusion that existing research on these issues are deficient in three areas: a) humans have tendency of exhibiting different and contradictory styles depending on the situations they found themselves; b) that the scopes which previous researches identified are highly superficial and must be refined; and c) that styles might be positively or negatively linked. Literature also lend credence that features of individual are strong predictor of actual usage (Venkatash et al., 2003), as

depict in Figure 1.

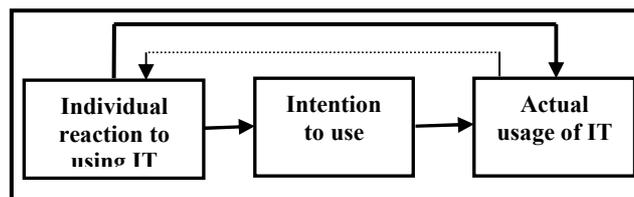
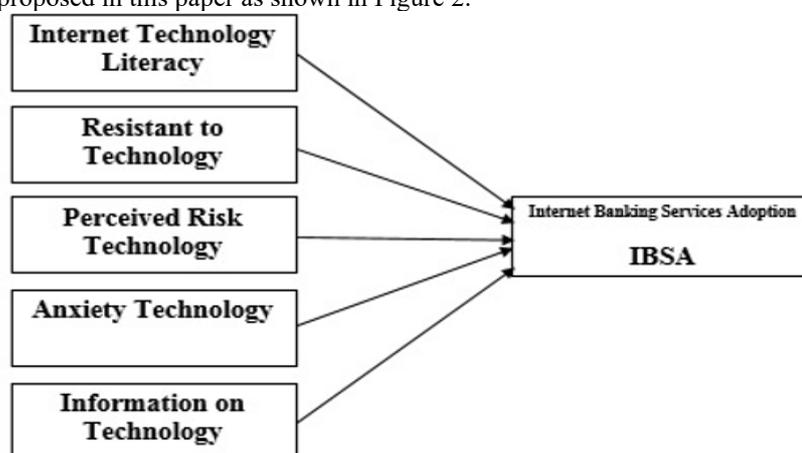


Figure 1: Basic concept underlying user

The study of influence of individual factors technology on the adoption of internet banking is still very sparse. Even though past researchers have made several attempts to investigate the individual factors technology (Agarwal & Prasad, 1998; Agarwal, Prasad & Zanino, 1996; Zmud, 1979; Venkatesh et al., 2003) the influence of the individual factors technology on the adoption of internet banking is still lacking in the literature. The research framework proposed in this paper as shown in Figure 2.



Importantly, a parallel line exists between internet banking and online consumer behavior based on TPB. Li et al. (1999) in this instance posits that internet experience, convenience, perceived accessibility and utility impact online consumer behavior strongly. Extant literature also assert that literacy about internet technology is a major factor influencing the decision to make online purchasing in Thailand through social media. This therefore indicates that the possibility of increasing the rate of adoption will be high if people has adequate knowledge about issues surrounding technology usage as such will boost their understanding and application of it (Avirutha, 2012). This assertion is equally supported by other scholars by noting that inadequate of internet or computer knowledge is one of the likely reasons for not adopting IBS (Karjaluoeto et al., 2002)

Further, customers' are still very hesitant in changing from brick and mortal banking to IBS (Sathye, 1999; Wallis, 1997; Alagheband, 2006; Al-Somali et al. 2009). Ideally, customers can transist or change from one form of banking to another especially if their needs are met. However, Daniel (1999) found that customers still maintain high level of inertia to switch from traditional banking to IBS. As noted by Al-Somali, Gholami and Clegg (2009) in their study of 400 customers in the Kingdom of Saudi Arabia (KSA), customers resistance is still one of the major factors inhibiting adoption of internet banking.

Asides, other researches have also indicated that perception of risk impacts the behavior of customers (e.g., Sweeney et al., 1999; Grewal et al., 1994). This perception is divided into two components of uncertainty, that is, the possibility of unfavorable outcomes and effects which refer to the importance of a loss (Cox & Rich, 1967; Bauer, 1960). The study of Chang and Tseng (2011) which surveyed 332 respondents found that perceived risk also has strong influence on consumer's purchase intention. This therefore indicates that it is essential for online retailer to understand the needs of their customers while every effort is made in providing improved quality service at reduced shopping costs/risks. This is also in line with the position of the study of Fitzgerald and Kiel (2001) that explored online purchasing behavior by inculcating perceived risk as one of the variables that can impact attitude of consumers. The result of this study also indicates risk significantly influenced the behavior of adopters. Moreover, Pavlou (2003) also explored the perception of risk while predicting intention to transact in an e-commerce environment. In this study, Perceived risk was found to be significant but negatively related to customers behavior (Taylor, 1974). This therefore indicates that the higher the perception of risk, the lower the tendency that customers will buy the product (Taylor, 1974).

Anxiety was further explored as part of the social cognitive theory and as one of the predictors of outcome expectation or usage. Scholars have recognized anxiety as part of part of personality traits as it accounted for in the individual differences literature (Agarwal, Sambamurthy & Stair, 2000; Thatcher & Perrewe, 2002). Importantly, perceived anxiety has been found to be statistically significant since it outweighs other factors while explaining the actual usage behavior of the e-filing system in the Malaysian contexts (Ibrahim, 2012). This therefore justifies the inclusion of anxiety as a predictor of IBSA, and as part of the composition of individual traits of using technology (IB).

One of the common important factors that are often considered while making online transaction decision is the quantity of information the customers have about technology. According to Guiltinan and Donnelly (1983) the quantity of information concerning the advantages or uses of a product/service", is a strategy that can be used to promote certain service/product. This is also in line with the Wallis Report (1997) which states that consumers will prefer those financial services and suppliers which give the best value for money as well as provide information about the profit. Howard and Moore (1982) also argued that consumers must be conversant with the new brand before adopting it. It is therefore essential to create awareness of the service or product among consumers before adoption can take place. Howcroft et al. (2002) also emphasized that lack of information about the benefits of IBS could negatively influence the behavior of customers. This is also in line with the findings of Al-Somali et al. (2009) where TAM factors were used to investigate IBSA. The finding of this study reveals that information about the benefits of IBS has significance influence on IBSA.

Hypothesis Development

Hypothesis is a proposition of the logically guessed relationship between two or more variables, which is based on the theory of theoretical framework that is empirically testable to find the expected solution to the problem statement (Sekaran & Bougie, 2010; Zikmund, Babin, Carr, & Griffin, 2010). Therefore, the position of this study is that when IBSA is successfully implemented, continuous adoption of Internet banking is possible.

In view of the above, personality dimensions have been regarded as one of the factors that can usage behavior because it is related to individual personality. This further implies that affective and cognitive structures of individuals can assist them to adjust in dealing with people, situation and events. Based on literature, these dimensions are believed to be significant in influencing customers toward IBSA.

Importantly, most of the previous studies were carried in different settings (Compeau & Higgins, 1995; Venkatesh, et al., 2003), while the studies that look into individual factors of technology such as anxiety, resistance to technology, risk technology and information on technology in IBSA generally are very sparse. However, the researchers has not found any study in IBSA setting that included this dimension as an antecedent of IBSA. Since IBS is a type of online technology services, the emphasis is played on the importance of these individual factors and how they influence individual behavior towards adoption of IBSA. In this view, it is the objective of this study to examine these dimensions: resistance to technology, internet technology literacy, risk of technology, information on technology, anxiety about technology, and the influence on IBSA.

Based on the previous arguments relating to individual factors dimension, the following hypotheses are posited:

H1: Internet and Technology literacy positively influence customers' adoption of Internet banking.

H2: Resistance to technology significantly impacts on customers' adoption of Internet banking.

H3: Risk of technology (RT) negatively influences customers' adoption of Internet banking.

H4: Anxiety of technology (AT) negatively influences customers adoption of Internet banking.

H5: The amount of Information on internet banking (IOI) positively influences customers adoption of Internet banking.

METHODOLOGY

The central objective of this study is to examine the influence of individual factors technology on the adoption of internet banking in the gulf public universities sector. These universities are located in in the Middle, Northern, and South geographic region (Mohsen, 2011).

In conducting this study, a quantitative survey through the usage of a structured questionnaire was used in collecting the primary data for this study. In addition, a probability sampling technique was used as the technique gives every individual targeted response an equal opportunity to be selected (Salkind, 2003). This technique does allow any form of bias regarding the sampling process (Cavana, 2001) as it also ensures high generalizability of the result. In conducting the study, eight hundred questionnaires were directly distributed while only five hundred and thirty five (67%) were eventually used for analysis. Direct distribution of the questionnaire because the postal system is not reliable.

In testing the variables of this study, the researchers adopted/adapted measurement scale for each construct from past studies. In view of this, a 4-items scale of IBSA is adapted from Raman et al., (2008). Internet technology literacy 5-items scale was adapted from Nasri (2011); and Poon (2008). Resistance to technology based on four items scale was adapted from Al-somail et al. (2009). A four item scale on perceived risk of

technology, was adapted from Grabner-Krauter and Faullant (2008); and Abushanab & Pearson (2010), while the scale of Anxiety about technology was adapted from Abushanab and Pearson (2010); and Ibrahim (2012). Lastly, four items scale for Information on technology was adapted from Al-somali et al (2009). All of the measurement scales are tested using 7-point Likert type.

ANALYSIS OF RESULTS

To analyze the result of this study, partial least-squares (PLS) analysis technique was used. With the PLS SEM, the researchers was able establish the measurement model for the purpose of determining the internal consistency reliability and construct validity of the items scales used to operationalize the study variables. The PLS was also used for testing of hypotheses.

Validation of the Measurement Scale: In the data analysis stage, a two-phase approach as recommended by Anderson and Gerbingin (1998) was employed in order to assess the reliability and validity of the measures before using them in the research model. In the first phase, the measurement model is analyzed, while the second phase tests the structural relationships among latent constructs. The measurement model helps to establish internal consistency reliability, convergent and discriminant validity of the research instruments. This is in essence signifies the strength or otherwise of the intending model (Fornell, 1982). As indicated in Table 1, all reliability measures were above the threshold of 0.70 as an indication of adequate internal consistency (Hair, 2010; Nunnally & Bernstein, 1994).

Table 1 Convergent Validity Analysis

Constructs	Items	Loading	Cronbachs Alpha	Composite Reliability	AVE
AOT	AOT1	0.789	0.797	0.812	0.678
	AOT2	0.517			
	AOT3	0.648			
	AOT4	0.897			
IBSA	IBSA1	0.880	0.748	0.841	0.582
	IBSA2	0.865			
	IBSA3	0.471			
	IBSA4	0.763			
IOT	IOT1	0.574	0.732	0.736	0.528
	IOT2	0.509			
	IOT4	0.957			
	PB5	0.796			
	RTT	0.936			
RTT	RTT1	0.611	0.453	0.761	
	RTT4	0.936			
RT	PRT1	0.792	0.850	0.892	0.625
	PRT2	0.821			
	PRT3	0.876			
	PRT4	0.792			
	RTT4	0.936			
TIL	TIL1	0.716	0.755	0.833	0.556
	TIL2	0.677			
	TIL4	0.823			
	TIL5	0.759			

In addition, the convergent and discriminate validity of the constructs very satisfactory and in line with the recommendation of Fornell & Larcke, (1981). A convergent validity is said to valid when the average variance extracted (AVE) of the constructs is at least 0.5 (Fornell & Larcke, 1981). This is also applicable to convergent validity as the items loading on their associated factors should be above 0.556.

However, for discriminate validity to be satisfactory, the calculated AVE from the construct should be higher than the variance shared between a particular construct and other constructs in the model (Hair et al., 2010). The discriminant validity of constructs, with correlation among constructs and the square root of AVE on the diagonal. All indicators load more highly on their own constructs than on other constructs. All these results point to the convergent and discriminant validity of our instrument items.

Examination of Research Hypotheses

The results of the analysis that are obtained from PLS are used to accept or reject the proposed hypotheses. This was achieved by considering the significance of the standardized path coefficient beta weight (β) which explains the level of relationship among the constructs. The (R^2) value, reveals the amount of variance in endogenous variable which the independent variables explain. The path coefficients and R^2 show the quality of the model. The R^2 shows the predictive ability of the model while it is similarly interpreted in the same way regression

analysis R^2 is interpreted. In line with the arguments of Chwelos et al. (2001), the path coefficients should be significant and consistent with expectations. In order to obtain statistical significance level of the paths, this study applied the bootstrapping techniques embedded with the SmartPLS2.0.

Therefore, for individual technology factors, all the 5 Hypotheses are supported while only one is not. The result reveals that technology and Internet literacy significantly and positively influence adoption of Internet banking at the 0.01 ($\beta = 0.466$, $t = 5.672$, $p < 0.01$) (H1). Resistance to change significantly and negatively influences customers' adoption of Internet banking at the 0.01 ($\beta = -0.118$, $t = 2.262$, $p < 0.01$) (H2), Risk of technology significantly and negatively influence customers' adoption of Internet banking at the 0.01 ($\beta = -0.125$, $t = 3.818$, $p < 0.01$) . Anxiety of technology has a significant and negative influence on customers' adoption of Internet banking at 0.01 ($\beta = -0.172$, $t = 4.821$, $p < 0.01$) (H4). Finally, The amount of Information on internet banking has no influence on customers' adoption of Internet banking ($\beta = 0.082$, $t = 1.197$, $p > 0.01$), which mean that the H5 is unsupported, as reported in Table 2.

Table 2: Assessment of the structural model

H	Path Coefficient	(STERR)	T value	P value	Decision
TIL -> IBSA	0.466	0.082	5.672	0.000***	Supported
RTT -> IBSA	-0.118	0.052	2.262	0.024**	Supported
PRT -> IBSA	-0.125	0.033	3.818	0.000***	Supported
AOT -> IBSA	-0.172	0.036	4.821	0.000***	Supported
IOT -> IBSA	0.082	0.068	1.197	0.116	Not Supported

Discussion and Conclusion

This study was carried out with the purpose of examining the influence of the individual technology factors on the adoption of internet banking. The findings of the study show that four out of five hypotheses were statistically supported. This result was achieved by applying partial least squares structural equation modeling (PLS-SEM) as well as SPSS. PLS SEM is a relatively new analytical technique being used by the contemporary researchers.

Succinctly, this study provides empirical evidence that internet technology literacy significantly influences the adoption of internet banking and which makes H1 to be accepted. This result is in tandem with the findings of other studies (Nasri, 2011; Karjaluoto et al., 2002). As argued by Avirutha (2012), customers who have technical knowledge of the internet are more inclined to use internet banking than otherwise. This is also in line with the position of Karjaluoto et al. (2002) who found that that prior Internet technology experience significantly impacts attitude towards and actual usage of online banking. Additionally, the result of this study also shows that resistance to technology has significant but negative influence on IBSA thereby making H2 to be supported. This outcome agrees with existing empirical findings (Alsomali et al., 2009; Avirutha, 2012; Sathye, 1999). The implication this is that even though the customers still maintain some level of confidence in their banks, it is evident that majority of them are still hesitant about usage of online banking. This is obvious as the empirical evidence of this study has shown that when the customers are not too sure about the safety of their financial transactions, they tend to be apprehensive and which subsequently has some negative impact on the usage of online banking.

Further, the empirical evidence also shows that perceived risk has significant but negative influence on IBSA thereby making (H3) to be supported and in line with the findings of other studies (Farzianpour et al., 2014; Nasri, 2011, Avirutha, 2012). This finding reveals that when the users of online banking perceived high level of uncertainty, their rate of usage of online banking may be reduced. Relating to (H4), the finding of our study reveals that this hypothesis is supported. Similar results have been reported by previous studies in different contexts (Compeau& Higgins, 1995; Ibrahim, 2012). The implication of this is that people with high anxiety are averse to usage of online banking. Surprisingly however, the relationship between amount of information on technology and adoption of internet banking was found to be insignificant and which makes H5 not to be supported. This result is similar to that of Nasri, (2011) and Prakash & Malik (2008) in the IBSA setting.

As a recap, and based on the findings of this study, it is essential that banks should pay significant attention to issues that can enhance customers experience through the development of an alternative banking platform that can make interaction with customers to be easy and friendlier as this will complement the utilitarian aspect of internet banking. Importantly, this will help the banks to build a strong relationship with their customers while the banks will enjoy goodwill. In addition, since security situation is extremely sensitive, it is very necessary that the banks should hire services of expatriate that can help to improve the security situation the online banking platform.

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APPENDIX: Measurement Scale of Constructs

Internet Technology Literacy

1. I feel comfortable when using computers in general.
2. I feel comfortable when using the internet technology.
3. I am satisfied with my current skills for using the internet.
4. I believe computer literate keeps me using internet banking services.
5. I believe Internet literate keeps me using internet banking services.

Resistant to Technology

6. I am interested to hear about new technological developments.
7. Technological developments have enhanced our lives.
8. I feel comfortable in changing and using internet banking services for my financial activities.
9. I like to experiment with new technologies such as Internet banking services.

Perceived Risk Technology

10. I believe that money can be easily stolen while using Internet banking.
11. I believe that the decision to transact using IB is risky.
12. I believe that the decision to transact using IB is negative.
13. I am afraid that other people might get access to information about my Internet banking transactions.

Anxiety Technology

14. I feel nervous about using Internet banking.
15. It scares me to think that I could lose a lot of information using internet banking by hitting the wrong key.
16. I hesitate to use internet banking for fear of making mistakes I cannot correct.
17. The using of internet banking is somewhat intimidating to me.

Information on Technology

18. I receive enough information about internet banking toward IBSA.
19. I receive enough information about the benefits of internet banking toward IBSA.
20. I receive enough information of using internet banking.
21. I am aware of Internet banking and its benefits

Internet Banking Services Adoption (IBSA)

22. I find internet banking is useful for managing my financial matters.
23. I believe internet banking is an easy way to conduct banking activities.
24. I find that internet banking is encouraging.
25. I feel fast internet access speed is important in internet banking