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Full Length Research Paper

Factors Affecting the Intention to adopt Internet Banking Services among Small and Medium Sized-Enterprises in Yemen

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In spite of the wide adoption of Internet banking service in developed countries, its application is still low in developing countries like Yemen. The purpose of this study is to examine and investigate the main factors which influence the adoption of Internet banking services by Small and Medium Enterprises (SMEs) managers or owners in Yemen. The research framework consists of five latent variables, four exogenous variables and one endogenous variable. The exogenous variables consist of environmental factors such as ICT readiness, regulatory support, financial institution support and competitive pressure while endogenous variable comprises of intention towards Internet banking service adoption (IBSA). In addition, this study will explain how the Technology Organization Environment (TOE) framework was being used in examining the factors of Internet banking services adoption in Yemen. The hypothetical relationship was examined using structural equation modeling (SEM). The findings of the study indicated that competitive pressure was the high predictor that influence towards IBSA followed by regulatory support and financial institution support while ICT readiness was an insignificant and negative effect towards IBSA in Yemen.

Keywords: Internet Banking Services Adoption (IBSA), Environmental factors, TOE framework, SMEs, Yemen.

INTRODUCTION

Internet Banking Service (IBS) is extremely beneficial to both banks and customers. The main benefits to banks are cost savings, reaching new segments of the population, efficiency, enhanced reputation and better customer service satisfaction (Nasri, 2011; Khrerwesh, 2011). IBS also offers a competitive advantage to banks by providing an unlimited distribution network. Through this technology, banks are able to provide services electronically such as lowering transaction costs and adding value to the customer-banker relationship. Internet enables banks to offer high value-financial services at lower costs (Al-Sukkar and Hasan, 2005).

Unfortunately, in spite of all these advantages, many customers of financial institutions have yet to embrace

these technologically advanced services offered by the banking industry especially in the Middle East and in Yemen in particular (Khalel and Micheal, 2007; Al-Kibsi, 2010; Al-Majali, 2011). The use of Information Technology (IT) enables employees to work anywhere. The effect of IT on businesses has been the subject of many studies in developed countries such as in the USA and European countries. Many researchers have analyzed psychological, managerial, infrastructural, organizational and economical factors of diffusing IT with commerce in developed countries. However, the relationship of IT with commerce in developing countries has not been significantly studied (Trafdar and Vaidya, 2006).

Since the success or failure of IB is contingent upon the degree of its adoption, there is a need to investigate which factors influence customers' intention towards Internet Banking Adoption (IBA). This study attempts to identify and better understand these factors by focusing on the Yemeni banks' customers especially the small and medium sized-enterprises (SMEs) whereby their knowledge can help the banking industry to formulate its marketing strategies to promote new forms of IB systems in the near future in Yemen. Despite the provision of electronic infrastructure by Yemeni banks and spending millions of dollars annually to adopt electronic banking, Internet Banking Service Adoption (IBSA) is very low and minimal in Yemen (CAC Bank, 2012; Al-Hareri, 2008; Homaid, 2010; Zolait, Mattila and Sulaiman, 2009; Al-Ajam and Nor, 2013). Some of the main reasons of very low IBSA in developing countries especially in Yemen, could be declining and lack the environmental factors such as information communication technology (ICT) readiness, regulatory support, financial institution support and competitive pressure (Al-Nahian, Shahriar and Nayeema, 2009; Al-Hareri, 2008; Nupur, 2010; Worku, 2010; Zolait, 2009). This research tries to add to the body of knowledge in the area of technology acceptance and extends our knowledge of the factors affecting IBSA by SMEs in Yemen. Therefore, this study seeks to achieve the following objectives.

1. To explore the level of intention to adopt IB applications among SMEs.
2. To identify the important predictors of SMEs' intention towards IBSA.
3. To examine the role of environmental factors (ICT readiness, regulatory support, financial institution support and competitive pressure) in the intention towards IBSA by SMEs.

Literature review

Internet Usage in Yemen

Internet usage in Yemen is confined to a very small percentage of the population but is limited more by economic factors than by state sanctioned censorship compared to other states in the region (International Monetary Fund, 2010; Ministry of Communication and Information Technology in Yemen, 2010). In 2000, the percentage of Internet users was very low, it was 1.5% of the population and the number of users increased gradually to 420,000 users in 2010. However, the percentage rose rapidly from 1.8% in 2010 to 14.9% in 2012 in which the number of users reached 3,595,890 due to awareness of people to use Internet. Table 2 shows the Internet usage and population statistics in Yemen from 2000 to 2012 (www.Internetowrldstatte.com, 2011).

SMEs and ICT relationship

ICT is an important tool that provides the opportunity for SMEs to improve their competitiveness in the business arena (Selatmat, Jaffar and Abd-AlKader, 2011). Noor (2009) examined the relationship between ICT and its five factors: perceived benefits, cost, ICT knowledge, external pressure and government support by SMEs in Malaysia. The findings of the study show that three factors: perceived benefits, ICT knowledge and government support are significantly important to the adoption of ICT while cost and external pressures are found to be insignificant in determining its adoption. The study provides a greater understanding of SMEs' perception about ICT adoption in their service business. Tan (2009) explains that the benefits of ICTs are widely published. The adoption of appropriate ICTs will generally benefit most SMEs that adopt them by increasing productivity, increasing efficiency of internal business operations and connecting SMEs more easily and cheaply to external contacts. Other benefits include increasing business competitiveness, vertical integration with other related business, stakeholders and institutions (Levy, 2003).

Technology Organization Environment (TOE) Framework

Technology Organization Environment (TOE) framework was developed by (Tornatzky and Fleischer, 1990). The TOE framework is a widely accepted framework for organizational adoption of IT systems. It is one of the best alternatives to other theories used for IT adoption research (Alatawi et al., 2012). In addition, TOE framework explains how to adopt technology innovation by a firm not only because of technological consideration but also due to the organizational and environmental contexts. These three elements present both constraints and opportunities for technology innovation (Tornatzky

Table 2. Internet Usage and Population Statistics in Yemen (2000-2012)

Year	Population	Internet users	Penetration Population (%)	GDP p.c.	Usage source
2000	17,000,000	170,000	1%	US$410	ITU
2001	19,600,000	100,000	0.5%	US$500	ITU
2005	20,764,630	220,000	1.1%	US$550	MOf.T
2009	22,858,238	370,000	1.6%	US$550	ITU
2010	23,495,361	420,000	1.8%	US$1,274	ITU
2012	24,771,809	3,595,890	14.9%	US$1.070	ITU

Source: 1 International Telecommunication Union [ITU] (2011)
2 www.Internetowrldstatte.com, (December, 2011)
Note: Per Capita in US dollars, source: International Monetary Fund (2012); Ministry of Telecommunication and Information Technology: Yemen (2012)

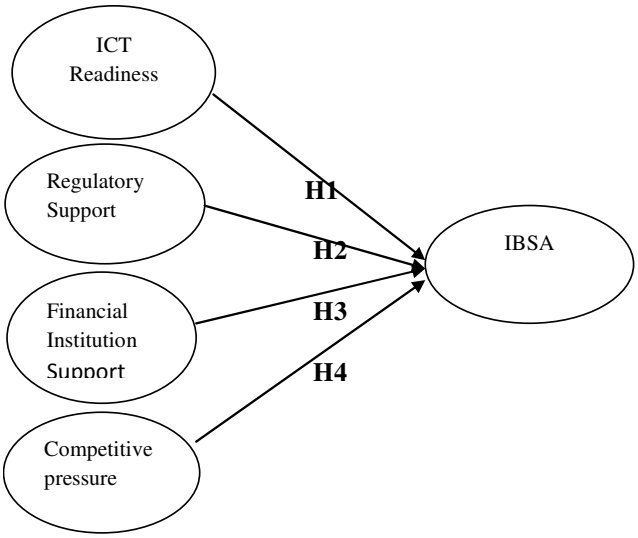

Figure 1. Conceptual framework

and Fleischer, 1990). They also suggest that the technological context includes the internal and external technologies that are relevant to the organization. The organizational context includes the characteristics and the resources of organization such as the size and scope of organization as well as the managerial structure. The environmental context includes industry characteristics, technology support infrastructure, government regulation and the firm's competitors**.**

Sherah, Fei and Yi (2010) point out that TOE framework is a comprehensive and well received framework in the context of innovation adoption by organizations and has been used in many studies. The study's findings imply that environmental factors such as regulatory support and government's role are important to protect the users of IB. In another related study, Al Nahian et al. (2009) integrated some theories such as TOE, TAM, institutional intervention theory and institution theory for using IB by SMEs in Bangladesh. They indicate that there are internal and external environmental factors to adopt IB by SMEs in developing countries. They also found that ICT industry readiness, government role, banks readiness and pressure from institutions have significant and direct effect to adopt IB by SMEs.

Factors Influencing the Adoption of Internet Banking

The main aim of the current study is to understand SMEs' IBSA through investigating its key factors using the Technology Organization Environment framework (TOE). Environmental factors include external environmental characteristics that may influence organizational adoption of IB. This study adds some relevant constructs to be used in the environmental factors, as supported by similar studies on specific IS/IT adoption which are most

Table 3. Factor loading for all Items

Name of Constructs	Constructs code	Number of Items	Items	Factor Loading
Internet Banking Service Adoption	IBSA	4	IBSA1 IBSA2 IBSA3 IBSA4	.830 .859 .851 .827
ICT Readiness	ICT	3	ICT1 ICT2 ICT3	.855 .875 .716
Regulatory Support	RS	7	RS1 RS2 RS3 RS4 RS5 RS6 RS7	.763 .799 .786 .833 .826 .819 .856
Financial Institution Support	FIS	3	FIS1 FIS2 FIS3	.849 .804 .702
Competitive pressure	RS	3	Comp1 Comp2 Comp3	.704 .794 .659

Table 4. Discriminant Validity of Construct

	CR	AVE	MSV	ASV	Comp	ICT	RS	FIS	IBSA
Comp	0.764	0.520	0.279	0.246	**0.721**				
ICT	0.856	0.667	0.272	0.172	0.437	**0.817**			
RS	0.931	0.660	0.272	0.215	0.496	0.522	**0.812**		
FIS	0.829	0.618	0.268	0.182	0.518	0.359	0.460	**0.786**	
IBSA	0.907	0.709	0.279	0.155	0.528	0.307	0.358	0.346	**0.842**

suited to the context of this research (Ifinedo, 2011; Al-Nahian et al., 2009). These factors include ICT readiness and financial institution support. Therefore, environmental factors contain ICT readiness, regulatory support, financial institution support and competitive pressure. These factors reveal a positive significantly relationship with intention towards IBSA (Pudjianto and Zo, 2009; Al-Nahian et al 2009; Awa and Ukoha, 2012).

Environmental Factors and IBSA

In the present study, the environmental factors include external environmental characteristics that may influence organizational adoption of IBS. Various environmental variables such as competitive pressure, trading partner pressure, environmental uncertainty government pressure and external support are examined to investigate the relationship between environmental factors and innovation adoption. These factors have a positive relationship on the intent to adopt innovative technology (Zhu et al., 2003; Lacovou et al., 2005; Ozturk, 2010).

In this study, these factors include ICT readiness, financial institution support, regulatory support and competitive pressure. As mentioned earlier, these factors are identified based on prior IB studies and TOE framework. In order to explain the role of these factors that affect organizational behaviour to adopt IB, Al-Nahian et al. (2009) demonstrate that a good economic situation means good standard of living and good investment. In this case, banks have a sufficient budget to adopt new technology like e-banking. Legal factors are important to support customers and banks to adopt e-banking technology. Without government support and protection of telecommunication infrastructure, banks and customers cannot adopt advanced technology like e-banking. Thus, government should apply regulations to protect banks and customers from unexpected events (Khrewesh, 2011).

Kiong (2004) reveals that environmental factors such as characteristics of a market that include customers' preference and demographic factors could encourage or inhibit e-commerce adoption by firms. This study found that countries with low IT literacy and underdeveloped telecommunication infrastructure have low diffusion of e-

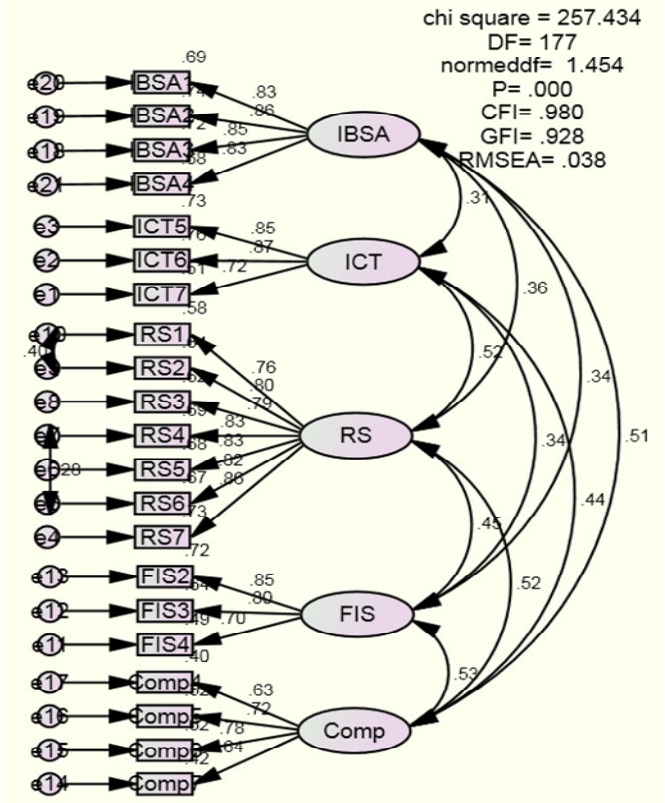

Figure 1. Measurement Model

commerce both in the business to customers and business to business areas. From the previous discussion, the main four factors (ICT readiness, regulatory support, financial institutions support and competitive pressure) are connected to each other.

Hypotheses

From the discussion of the theoretical framework, four hypotheses were formulated to test the relationship between each of the four independent variables and dependent variable. The four hypotheses guiding this study are as follows:

H1: ICT readiness has a significant and positive effect with IBSA

H2: Regulatory support has a significant and positive effect with IBSA

H3: Financial institution support has a significant and positive effect with IBSA

H4 Competitive pressure has a significant and positive effect with IBSA

METHODOLOGY

Respondents for this study were SME owners/managers who have a bank account. In addition**,** the study population comprises of all SMEs from manufacturing, trade and service sectors in Sana'a, the capital city of Yemen which are registered under the Ministry of Industry and Trade (MIT, 2012). Sana'a is selected as the location of the study due to the proliferation of SMEs in the city. Another reason for selecting Sana'a is that it is a representative geographical area, because the Yemeni Internet population is concentrated in five large cities with almost 60% in the capital city of Sana'a (Zolait et al., 2010).

The survey was conducted during the period from 23 November to 20 January 2014 (approximately 9 weeks). The total number of distributed survey questionnaires was 920. Of the 920 survey, 377 questionnaires were returned which represented approximately 40% response rate. Due to large cases of missing values, 55 questionnaires were excluded from the analysis and thus, a total of 322 usable questionnaires were utilized. The

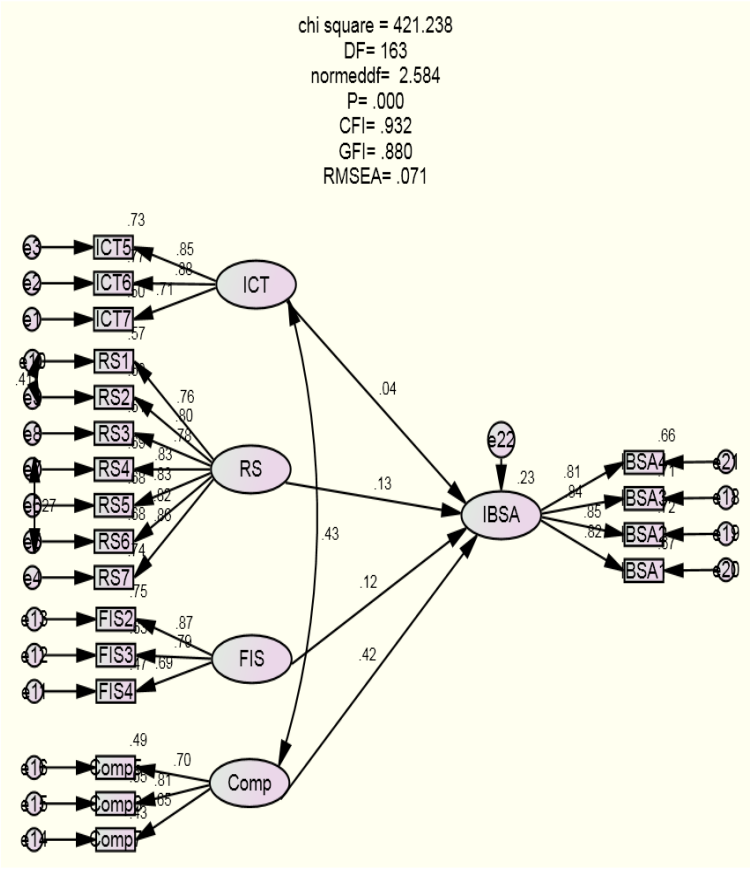

Figure 2. Structural Model

Table 3. Hypotheses Testing of Results Model

Hypothesis	Exogenous Variables	Endogenous Variables	Std. Estimated	C.R	P-Value	Result
H1	ICT	IBSA	0.036	.583	0.560	Unaccepted
H2	RS	IBSA	0.124	2.298	0.022	Accepted
H3	FIS	IBSA	0.438	5.487	***	Accepted
H4	Comp	IBSA	0.108	2.043	0.041	Accepted

sample size of n=322 was considered as sufficient for this study (Pikkarainen et al., 2004; Tan and Teo, 2000; Zolait, 2009). The study sample size achieved the ratio of 32:1 (n=322 and 10 variables) which was more acceptable because the cases had exceeded the ratio of 10:1 (Hair, et al., 2006: p. 112).

Validity Test

Convergent validity

According to Hair et al. (2010), convergent validity shows the extent to which indictors of a special construct converge or high proportion of variance's common. Convergent validity can be analyzed via Confirmatory Factor Analysis (CFA). Table 3 shows that all items have a loading of more than 0.50 and ranged from 0.659 to 0.875. In this case, the factor loading for the items is acceptable if the study sample is approximately 300 respondents (Hair et al., 2006). Therefore, all indictors in the current study are related to their constructs and thus there is satisfactory proof of convergent validity of the model.

Discrinimant Validity

Discriminant validity gives the extent to which a construct is truly distinct from other constructs (Hair et al., 2010). Discriminant validity is evaluated by using Average Variance Extracted (AVE) for every construct that exceeds the squared correlation among other constructs (Fronell and Larcker, 1981).

Discriminant validity was indicated, as the AVE values are more than the squared correlations for each set of construct. In addition, the square root of the AVE for a given construct was greater than the absolute value of the correlation square of the given construct with any another factor (AVE > correlation square). Table 4 shows the square root of the AVE for all constructs greater than the correlations between the construct and other constructs in the model. Moreover, the results of the study also shows all constructs had more than 0.50 and ranged from 0.721 to 0.842. Moreover, Table 4 below shows maximum shared squared variance MAV values were less than AVE values and the average shared square variance (ASV) values were less than AVE values as well. Therefore, the discriminant validity was supported and thus, all constructs for this study supported discriminant validity. Table 4 presents discriminant validity of the constructs.

Measurement Model

As for measurement values, all constructs had achieved the minimum estimation required which are 0.70 for Cronbach Alpha, 0.50 for AVE and 0.60 for CR.

Therefore, most of the indices showed achievement of a good fit as per the recommended values (Hair et al., 2010). The model showed the ratio of the chi-square to the degree of freedom was 1.454, less than 2 and RMSR was 0.04 less than 0.10 which indicated a good model fit and the RMSEA was 0.038, less than 0.08 which was considered a good fit (Hair et al., 2006). Also other measures indicated the GOF of the model to the data (CFI = 0.980, IFI= 0.978, TLI= 0.974) which indicated that the model employed in this study is a good fit to data (Schumacker and Lomax, 2004; Lee et al., 2007). Figure 4.3 shows the measurement model for exogenous and endogenous variables.

Structural Model

The results of the structural model show the model fit indices such as normed χ^2 value was 1.879 less than 2, indicating sufficient fit. In addition, CFI= 0.910, TLI = 0.904 and IFI = 0.910 which explain that the model employed in this research was a good fit to data. Moreover, the parsimonious index (RMSEA) was become the better measurement. The results indicate that RMSEA = 0.053. According to the pervious results, there was a difference in the fit indices of the final measurement model and structural model due to omission of the covariance among the exogenous factors falling in the groups of attitudinal and environmental factors. Figure 2 shows the results of the structural model (Goodness of Fit Indices).

HYPOTHESES RESULTS

The empirical study tested four hypotheses related to the aim of this study. Out of hypotheses that were related to the direct path between the variables, three hypotheses were accepted and only one hypothesis was unaccepted.

Environmental Factors Hypotheses

According the environmental factors hypotheses, the results of this study in Table 4.22 below show ICT readiness had significant effect on SMEs' intention towards IBSA in Yemen (β = 0.036; C.R = 0.583; P = 0.560), so, H1 is unsupported. Moreover, regulatory support had a significant and positive impact with intention towards IBSA (β = 0.124; C.R = 2.298; P = 0.022). Therefore, H2 is supported. However, the results show that financial institutions support had no significant and positive influence with intention towards IBSA (β = 0.108; C.R = 2.043; P = 0.041). Thus, H3 is unsupported. Finally, the findings of this study indicate that competitive pressure is an important factor that influenced SMEs' intention towards IBSA in Yemen. Competitive pressure had a significant and positive effect towards IBSA (β = 0.438; C.R = 5.487; P = 0.000). Therefore, H4 is supported. Table 4 shows the hypothesis testing results of the structural model.

DISCUSSION AND CONCLUSION

Although the majority of the respondents did not adopt IBS, the findings indicate that the SMEs in Yemen had higher level of intention towards IBSA in their business. Approximately 51% of the total variance on the intention towards IBSA was explained. It can be seen that almost 80% of SMEs at least agreed with the intention towards IBSA. This result can be driven from the calculated mean from one-sample test which equaled to 3.83 out of a maximum of 5. This is because most of the respondents could already be Internet users. About 80% had been users for several years which mean that the Internet usage by the SMEs could encourage them to use IBS in Yemen. The results of this study show that within the environmental factors, competitive pressure had a strong influence on intention towards IBSA among SMEs in Yemen. This study also found that the pressure from suppliers and competitors are very important to adopt IB among SMEs. The study findings also reveal that the supportive regulatory environment for legal protection and e-business supporting law was a significant factor for adoption of IB among SMEs in Yemen. Moreover, financial institution support also was a significant and positive impact towards IBSA. The implication of this is that ICT may not be an issue in the banks in Yemen.

However, the relationship between ICT readiness and intention towards IBSA was not supported. This may be the SMEs feel that there is not efficient and affordable support from local IT industry to complement the use of Internet.

Besides the academic implications of this model, the findings also suggest. This study is the first attempt to determine the factors that influence the intention of managers/owners of SMEs in Yemen to adopt IB. Therefore, the findings of this research have several valuable implications for banks and other organizations on e-commerce and e-business in the Yemeni context. This study also proves that managers/owners' attitude is influential in shaping their organizations' intention to adopt IB. This study has some limitations that can be addressed in future research. First, this study discussed a few factors of IBSA and disregarded other factors such as the top management, organization size, compatibility, cost, culture and others. Second, this study targeted only small and medium organizations in Yemen. Thus, the results of this research do not reflect the behaviour of other sectors such as large organizations or individual customers.

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