

# Internet Banking in Jordan: An Arabic Instrument Validation Process

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**Abstract:** *Internet banking is booming in Jordan and it is time for banks and customers to reap the benefits from such technology. Bank customers' propensity to use internet banking is dependent on their attitudes towards such technology. This work validates an Arabic technology acceptance instrument through a rigorous process so that banks can better understand the factors that affect the customer's intention to use the internet banking technology. The work utilized the backward translation method and developed an Arabic instrument for eleven constructs that yielded an acceptable level of reliability. Conclusions, implications and future work are provided at the end of the paper.*

**Keywords:** *Technology acceptance, factor analysis, Internet banking, Arabic instrument, UTAUT.*

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## 1. Introduction

World Wide Web (WWW) users have been increasing exponentially since its introduction in the 1990's. Based on numbers published by Internet World Stats [24], there are approximately 1244 million Internet users around the world, approximately 33.5 million of these internet users in the Middle East. The same source indicates that the growth rate of the Mediterranean users will be 920%, while the world rate will be 244% at the end of the year 2007. Internet banking offers customers the advantages of lower costs, location and time convenience, and the ease and speed of completing transactions. Banks also achieve lower costs, and customer responsiveness and satisfaction. The benefits of Internet banking can not be achieved unless customers use the bank website and its associated capabilities. Technology acceptance has become a critical issue in the business world today, specifically with respect to Internet Banking (IB). The increase in Internet users in the Middle East encourages banks to utilize this technology and to gain a market advantage. Without an Arabic instrument to assess the factors that influence a customer's decision to utilize IB technology, banks cannot effectively utilize this technology. The Arabic language is the main language used in the Middle East which emphasizes the importance of translating a technology adoption instrument to Arabic.

Internet banking in Jordan has developed rapidly since the year 2001 as most of the Jordanian banks have adopted some form of Internet usage and launched websites to serve their customers. The research conducted by Awamleh, Evans & Mahate [9] inspected the Jordanian banks' websites in July 2001

and found that only two banks supported customer transactions via the web. The researcher inspected 23 Jordanian banks at the end of 2007 and found that 16 banks provided functional Internet banking services. It is a necessity now to develop an effective and valid Arabic-based instrument to measure users' acceptance of Internet banking.

## 2. Technology Acceptance

Research done in the area of technology acceptance generally has lacked the integrated view needed to understand industry-specific domains. The latest work proposed by Venkatesh, Morris, Davis and Davis [44] integrates eight models into their Unified Theory of Acceptance and Use of Technology (UTAUT). The work proposed by these authors was a shift from a fragmented view of technology acceptance to a unified view that integrated the major theories and models in the area. Figure 1 shows the Unified Theory of Acceptance and Use of Technology. The UTAUT utilized the following models: the Theory of Reasoned Action (TRA), the Theory of Planned Behavior (TPB), the Technology Acceptance Model (TAM), the Model of PC Utilization (MPCU), the Motivation Model (MM), the Innovation Diffusion Theory (IDT), the Social Cognitive Theory (SCT) and a combined model of TAM and TPB. Table 1 summarizes these models.

## 3. Research Objectives

The main objective of this work is to validate and test an Arabic instrument in the context of Internet Banking utilizing a modified UTAUT model. Previous studies

performed in the Middle East tested other types of technologies or were in countries like Saudi Arabia and non-Arabic, but Islamic countries. The only study that has explored the banking sector in Jordan in relation to Internet banking was a study by Awamleh, Evans, and Mahate [9], and it explored the status of Internet banking in Jordan from a bank perspective and not a customer’s intention to use. This work is part of a stream of research that tested the following model.

The instrument used in this study utilized previously validated measures adapted from the technology acceptance literature. The instrument was translated to Arabic using Brislin’s backward translation method and was pilot tested on Arab students in the USA.

Table 1. Major models in the technology acceptance area.

Name	Major Constructs	Major Citations
The Theory of Reasoned Action (TRA)	Attitudes, Subjective Norm, Intention, & Behavior	[1], [6] & [22]
The Theory of Planned Behavior (TPB)	Attitudes, Subjective Norm, Perceived Behavioral Control, Intention, & Behavior	[4], [8], [28] & [46]
The Technology Acceptance Model (TAM) & TAM2	External Factors, Perceived Usefulness, Perceived Ease of Use, Intention to use, & Actual Systems Usage.	[17], [18], [32], [41], [42] & [43]
The Decomposed Theory of Planned Behavior (DTPB)	Perceived Usefulness, Compatibility, Perceived Ease of Use, Peer’s Influence, Superior’s Influence, Self-efficacy, Resource Facilitation Conditions, Technology Facilitation Conditions, Attitudes, Subjective Norm, Perceived Behavioral Control, Behavioral Intention, & Usage Behavior.	[12], [26], [33], [34], [35] & [36]
The Motivation Model (MM)	Intrinsic Motivation, Extrinsic Motivation, Amotivational Style, & Behavior.	[19], [20], [39] & [40]
The Model of PC Utilization (MPCU)	Long term Consequences of PC, Job Fit, Affect, Social Factors, Complexity, Facilitating Conditions & Utilization of PC.	[7], [14], [38] & [38]
Innovation Diffusion Theory (IDT)	Voluntariness, Image, Relative Advantage, Compatibility, Trialability, Visibility, Result Demonstrability, Ease of Use, & Rate of Adoption.	[3], [5], [29] & [31]
The Social Cognitive Theory (SCT)	Encouragement by Others, Other’s Use, Support, Self-efficacy, Outcome Expectations, Affect, Anxiety, & Usage.	[2], [10], [15] & [16]
The Unified Theory of Acceptance and Use of technology (UTAUT)	Performance Expectancy, Effort Expectancy, Social Influence, & Facilitation Conditions.	[44]

### 4. The Population and Sample

The population of interest in this study is Jordanian bank customers. The study used “counter bank customers” rather than other types of customers (like Internet customers) to control for the bias of existing

Internet banking customers and previous usage experience. Using current bank customers extends the external validity of the research as these customers are excellent proxies for the intended population of the study.

The study used a systematic random sampling (taken on intervals) of customers entering the bank over a two week period. The necessary sample size was estimated based on the number of independent variables tested in this study. Based on the recommendations of Hair, Anderson, Tatham, and Black [23] the sample size should be 15-20 observations per variable for generalizability purposes. For power calculations and to detect significant differences in R<sup>2</sup> with a power level of 0.8, the sample size should be greater than 100 [23]. The minimum level of R<sup>2</sup> value that can be detected is 15%. The change in the R<sup>2</sup> value can be reduced to 0.05, keeping power at the 0.8 level, by increasing the sample size to 320 observations. Therefore, the sample size targeted in this study was 320 usable observations. The final sample collected was 940, with more than 800 usable cases. The minimum R<sup>2</sup> value that can be found with this sample size is 3% keeping the same power level (0.8).

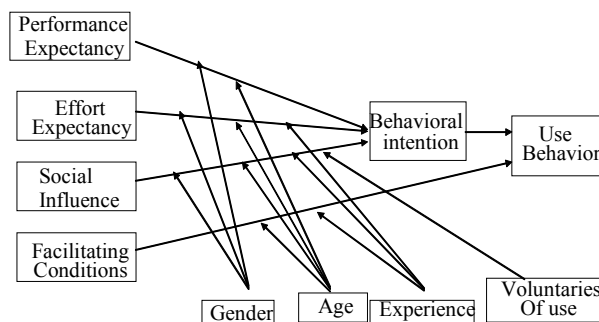


Figure 1. Unified theory of acceptance and use of technology.

### 5. Sampling Process

The sampling process took place at branches in the three major cities in Jordan (Amman, Zarqa and Russaifa). The institutions chosen for this study are three leading banks in the Jordanian banking sector: The Housing Bank for Trade and Finance, The Jordan Islamic Bank, and The Arab Bank. The purpose of using three banks and three cities is to guard/reinforce the external validity of the study. The choice of banks for sampling purposes (the three banks in this study) was based on the size of the bank and the availability of a contact person within the organization to facilitate data collection.

#### 5.1. The Survey Design

The survey used in this study consisted of three sections: first, a description of Internet banking and the services provided by Jordanian banks. Second, fifty two items were used to measure the variables tested in

this study. The items used for each construct are listed in Appendix A. The items used in this study are all previously tested and validated as shown in the appendix B.

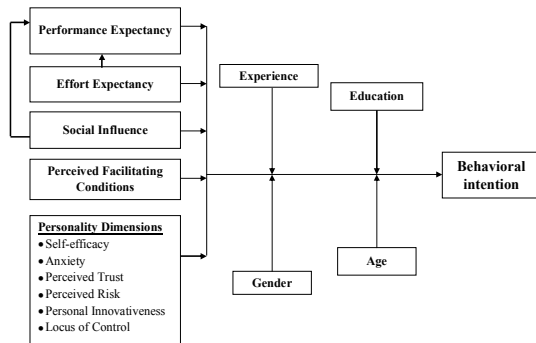


Figure 2. Proposed model.

## 5.2. The Translation Process

As stated by Brislin [11], the major premise that makes translating a survey an important issue is two fold: first, cultural differences between respondents, which will affect the response provided on the survey; and second, the language effect on the research process (even if language is the only difference between two cultures). Brislin based his argument on the emic-etic distinction, which defines two distinct perspectives that can be employed in a study of a society's cultural system, one of which is distinct to that culture and the other is adaptable by more than one culture [27].

Brislin proposed the backward translation method based on certain aspects that make other methods not suitable. This method involves translating existing and valid set of items to the target language, and then translating the instrument back to the original language. Finally, a comparison between the two original language versions of the instrument is made to check the validity of the translation process. The back-translation was originally proposed by Werner and Campbell [45] and was used in this study. The refined instrument (the English version) was submitted to a certified translation office in Jordan. At the same time, the initial copy was reviewed and translated by two Arab graduate students residing in the USA. After translation, the Arabic version was reviewed for differences between the translations (differences were minor). The Arabic version was then resubmitted to a second certified translation office and two other graduate students to back translate the Arabic version to the English language [11]. Finally, the two English versions (the initial one and the back-translated) were reviewed for consistency. The versions contained non-significant differences, which suggested the translation of the instrument was acceptable.

## 5.3. Pre-Testing/ Pilot Study

The Arabic survey was pilot tested using thirteen Arab students currently residing in the USA. The convenience of the pilot sample is important at this stage as the purpose of the pilot testing is the readability of the instrument and the flow of the questions. The pilot survey included a "your comments" section to collect opinions of the respondents before distributing the final version of the survey to the targeted sample in Jordan. Each student provided comments about the clarity and meaning of the items and the overall structure of the instrument. Further feedback was received from contact persons in the Jordan banking sector regarding specific terminologies used. The results of this stage indicated that the instrument flows well and did not include any mistakes or confusing items (based on Arab students' comments).

## 5.4. Data Collection

The survey was administered by one of the banks' employees in coordination with the contact person. Customers were sampled and invited to complete the survey on site. The total number of surveys distributed was 1300. The customers were approached in a random method by selecting one out of each five customers entering the bank. The decision to complete the survey was voluntary and no incentives were offered. The total number of surveys collected was 940.

## 6. Data Analysis

The first step performed on the data was to check the data visually to detect any missing data. The data contained 62 cases that were missing more than two responses. Those cases were deleted. The total number of usable responses after the visual inspection was 878 cases.

Preliminary regression analysis was conducted using the mean of the items representing each variable for each case, regardless of the reliability of the instrument and regression model accuracy. The purpose of the preliminary multiple regression test(s) was to check for outliers and influential cases only. The tests included Mahalanobis distance, Cook's D, leverage, standardized DFBeta, and the standardized residuals. Cases which exceeded the limits on more than one measure were deleted. Inspection of these measures resulted in deleting nine additional cases from the file. The cases that were deleted had residuals greater than 3.5, Mahalanobis distance greater than 30, and leverage values greater than 0.0379 (limit =  $3(k+1)/n$ ).

### 6.1. Factor Analysis

Factor analysis was used to confirm item loadings and to check the reliability of the measures used. The results of the analysis were used to develop a set of summated measures representing the eleven variables used in this study. An additional purpose of factor analysis was to reduce the items measuring each variable. The sample used for factor analysis was 869 cases. Hair *et al.* [23] recommends a ratio of 1-to-10 between the items to be factored and the number of cases used, with a minimum of 1-to-5. In this study, factor analysis was conducted on 51 items and the ratio of items to cases was 1-to-17.

The method used in the analysis was R-type factor analysis using an oblique rotation (Oblimin). Preliminary checks on the results indicated the overall suitability of factor analysis based on Bartlett's test of Sphericity with a  $\chi_{1275} = 29783.7$ ,  $p < .001$ . This indicates that correlations were adequate to conduct factor analysis. The Kaiser-Meyer-Olkin measure of sampling adequacy was used to check for excessive correlations with a value equal to 0.9466 (recommended value of KMO is greater than 0.5). This suggests the existence of small correlations between variables. Finally, a substantial part of the off-diagonal correlations in the anti-image matrix were less than 0.1, while the diagonal correlations were all more than 0.5. This indicates that factor analysis was an appropriate technique for reducing the number of items used in this study. (The correlation anti image matrix is available for inspection upon request from the authors).

Table 2. KMO and Bartlett's test results.

<b>Kaiser-Meyer-Olkin Measure of Sampling Adequacy.</b>	<b>0.9466</b>	
Bartlett's test of sphericity	Chi-Square	29783.7
	df	1275
	Sig.	.000

After running the factor analysis, we checked for the suitability of the rotation method. This was done through the inspection of the component correlation matrix (shown in Table 3 below). The matrix identified a significant portion of the correlations between the extracted factors as significant and between 0.2 and 0.4 [21]. Based on these findings, an oblique rotation was suitable for factor analyzing the data (values more than 0.25 were identified).

One aspect of a confirmatory factor analysis is the ability to limit the number of factors to be extracted. In this study, based on the proposed research model and literature review, eleven factors were extracted. The analysis limited the number of factors to eleven regardless of the eigenvalue (the lower limit allowed for the eigenvalue is 0.7). The cumulative variance

explained was 70.8%. Table 4 summarizes the explained variance of the extracted factors.

Table 3. Component correlation matrix.

Component	1	2	3	4	5	6	7	8	9	10	11
LOC	1										
Anx	-0.110	1									
PE	0.114	-0.168	1								
PT	0.218	-0.147	0.270	1							
SE	-0.262	0.017	-0.335	-0.293	1						
SI	-0.242	0.027	-0.283	-0.302	0.318	1					
EE	0.255	-0.224	0.478	0.226	-0.348	-0.259	1				
BI	0.312	-0.161	0.426	0.293	-0.295	-0.329	0.350	1			
PR	0.115	-0.273	0.286	0.245	-0.218	-0.094	0.332	0.254	1		
PI	-0.372	0.045	-0.281	-0.263	0.363	0.205	-0.321	-0.328	-0.208	1	
PFC	0.181	-0.050	0.246	0.186	-0.360	-0.309	0.291	0.241	0.208	-0.244	1

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.

Table 4. Total variance explained.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
LOC	17.801	34.905	34.905	17.801	34.905	34.905	6.273
Anx	3.525	6.911	41.816	3.525	6.911	41.816	4.300
PE	2.948	5.780	47.595	2.948	5.780	47.595	9.613
PT	2.043	4.006	51.601	2.043	4.006	51.601	6.743
SE	1.955	3.833	55.435	1.955	3.833	55.435	8.618
SI	1.775	3.481	58.916	1.775	3.481	58.916	6.508
EE	1.596	3.129	62.045	1.596	3.129	62.045	9.768
BI	1.252	2.455	64.501	1.252	2.455	64.501	8.291
PR	1.172	2.299	66.799	1.172	2.299	66.799	5.270
PI	1.047	2.053	68.852	1.047	2.053	68.852	7.221
PFC	0.972	1.906	70.758	0.972	1.906	70.758	5.635

Components with less than 1% variance contribution are not shown. Extraction Method: Principal Component Analysis.

Factors extracted represented all the variables in the research model. Behavioral Intention (BI), Performance Expectancy (PE), Effort Expectancy (EE), Self-Efficacy (SE), Anxiety (Anx), Perceived Trust (PT), and Personal Innovativeness (PI) loaded as expected on unique factors with significant loadings (loadings greater than 0.5 [23]). Social Influence (SI), Perceived Facilitating Conditions (PFC), Locus Of Control (LOC) And Perceived Risk (PR) Included Items that loaded with values less than 0.5 which is below the minimum significant level as shown in Table 5. These items were deleted from further analysis.

To estimate the final item loadings on each factor, factor analysis was run for a second time using an oblique rotation and using only the items that loaded previously with values greater than 0.5 on their respective factors. Table 6 shows the new pattern matrix and the final factor loadings.

This final set of items was used to estimate the reliabilities of the factors identified in this study. Cronbach's alpha was used as a measure of the reliability of the scales. Values acceptable in the literature for Cronbach's alpha range from 0.6 and above. The reliability measures are listed in Table 7.

### 7. Final Sample Demographics

Table 8 shows the demographics of the sample used for model validation. The table shows numbers related to bank, gender, age, education, and Internet banking usage (experience).

Table 5. Pattern matrix<sup>(a)</sup>.

Item	LOC		Anx	PE	PT	SE	SI	EE	BI	PR
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 9
BI 1	-0.005	-0.008	0.101	0.058	0.005	0.026	0.049	0.809	0.008	
BI 2	0.013	-0.027	0.045	0.021	-0.051	-0.059	0.009	0.856	-0.040	
BI 3	-0.095	-0.068	0.078	0.005	-0.046	-0.039	0.002	0.803	0.085	
PE 1	-0.096	-0.041	0.654	0.021	0.031	-0.022	0.024	0.244	0.028	
PE 2	-0.066	0.025	0.793	0.016	0.034	0.082	0.031	0.108	0.072	
PE 3	0.035	-0.008	0.874	-0.056	0.018	-0.001	-0.026	0.042	0.006	
PE 4	0.051	-0.027	0.856	0.003	-0.050	0.027	-0.019	-0.008	0.030	
PE 5	0.045	-0.013	0.814	-0.028	-0.049	-0.117	0.046	-0.035	0.006	
PE 6	0.107	0.054	0.741	0.034	-0.002	-0.077	0.145	-0.019	-0.028	
EE 1	-0.069	-0.071	0.126	0.062	-0.134	-0.017	0.613	0.030	0.027	
EE 2	-0.114	-0.027	0.083	-0.036	-0.067	-0.024	0.755	0.038	0.021	
EE 3	-0.039	-0.019	0.046	0.037	0.021	-0.067	0.827	-0.082	0.016	
EE 4	0.197	0.049	-0.019	-0.005	0.006	0.037	0.762	0.101	-0.034	
EE 5	-0.032	0.029	0.053	0.109	0.018	0.000	0.665	0.147	0.013	
EE 6	0.088	-0.043	0.057	0.130	-0.040	-0.049	0.733	-0.043	0.009	
SI 1	-0.009	-0.063	0.061	0.010	-0.021	-0.779	0.073	0.074	0.010	
SI 2	-0.029	-0.046	0.083	-0.022	-0.055	-0.757	0.124	0.041	0.058	
SI 3	-0.052	-0.071	0.035	0.053	-0.060	-0.441	0.192	-0.062	0.177	
SI 4	-0.116	-0.082	0.095	0.048	-0.069	-0.340	0.114	-0.094	0.205	
SI 5	0.094	0.067	0.047	0.003	-0.038	-0.648	-0.066	0.102	-0.002	
PFC 1	0.090	0.069	-0.048	-0.230	0.001	-0.026	0.167	0.126	0.199	
PFC 2	0.313	-0.046	-0.129	-0.189	-0.050	-0.085	0.229	0.209	0.141	
PFC 3	0.121	0.143	-0.006	0.242	-0.026	-0.296	-0.123	0.121	-0.186	
PFC 4	-0.002	-0.010	0.074	0.130	-0.091	-0.078	0.033	0.032	-0.087	
PFC 5	0.021	-0.065	0.126	0.101	-0.171	0.005	-0.043	-0.022	-0.053	
SE 1	0.219	-0.052	-0.038	-0.058	-0.549	0.067	0.179	0.158	-0.016	
SE 2	-0.043	-0.015	0.039	0.028	-0.762	-0.002	-0.023	0.035	-0.009	
SE 3	0.081	-0.023	0.065	0.017	-0.745	0.019	0.025	-0.022	0.025	
SE 4	0.053	0.010	0.005	-0.026	-0.774	0.010	0.035	-0.021	0.081	
SE 5	0.245	0.000	-0.020	0.027	-0.608	-0.187	0.059	0.062	-0.111	
SE 6	-0.230	0.091	0.003	0.064	-0.755	-0.027	-0.037	0.025	0.087	
Anx 1	0.083	0.844	0.014	-0.042	0.042	0.013	0.036	0.024	-0.071	
Anx 2	-0.048	0.906	-0.002	0.013	-0.019	0.100	0.055	-0.010	0.045	
Anx 3	-0.016	0.885	0.027	0.012	-0.041	0.009	-0.039	-0.049	0.076	
Anx 4	-0.031	0.841	-0.013	0.017	-0.025	-0.107	-0.031	-0.044	-0.013	
PT 1	0.036	-0.039	-0.012	0.739	0.032	-0.031	0.160	0.023	0.089	
PT 2	0.092	-0.070	0.021	0.708	-0.021	0.008	0.096	0.066	0.111	
PT 3	-0.049	0.080	0.003	0.747	-0.060	-0.054	0.016	0.065	-0.049	
PT 4	-0.009	-0.063	0.025	0.724	-0.079	0.078	0.083	0.018	0.051	
PI 1	0.017	0.007	0.066	0.132	-0.067	-0.292	-0.018	0.017	-0.047	
PI 2	0.254	0.013	-0.042	0.019	-0.034	-0.199	0.046	0.079	-0.099	
PI 3	0.045	-0.050	0.057	0.066	-0.018	0.074	0.061	0.032	0.043	
PI 4	-0.005	-0.040	0.081	0.078	-0.051	0.162	0.049	-0.006	0.130	
LOC 1	0.715	-0.047	0.088	0.004	-0.056	0.043	0.049	0.035	0.043	
LOC 2	0.601	0.018	0.043	-0.007	-0.057	0.005	0.056	-0.019	0.054	
LOC 3	0.770	0.013	0.035	0.033	-0.045	-0.135	0.041	0.064	-0.028	
LOC 4	0.443	-0.089	0.143	0.399	-0.072	-0.014	-0.011	0.036	0.130	
LOC 5	0.652	-0.076	0.082	0.114	-0.066	0.000	-0.010	-0.024	0.086	
PR 1	0.232	-0.051	-0.092	0.324	0.060	-0.144	-0.045	0.208	0.469	
PR 2	0.021	-0.018	0.091	0.083	-0.109	-0.007	0.013	0.017	0.778	
PR 3	0.007	-0.006	0.080	-0.008	-0.036	-0.022	0.006	0.025	0.823	

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 14 iterations.

◻ < than 0.5

Table 6. Final pattern matrix<sup>(a)</sup>.

Item	LOC		Anx	PE	SE	SI	PT	EE	BI	PR	PI	PFC
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 11
BI 1									0.831			
BI 2									0.876			
BI 3									0.852			
PE 1			0.650									
PE 2			0.793									
PE 3			0.904									
PE 4			0.875									
PE 5			0.834									
PE 6			0.768									
EE 1								0.626				
EE 2								0.779				
EE 3								0.843				
EE 4								0.760				
EE 5								0.653				
EE 6								0.723				
SI 1						0.769						
SI 2						0.747						
SI 5						0.681						
PFC 4												0.826
PFC 5												0.859
SE 1				-0.563								
SE 2				-0.757								
SE 3				-0.728								
SE 4				-0.752								
SE 5				-0.604								
SE 6				-0.724								
Anx 1		0.838										
Anx 2		0.903										
Anx 3		0.884										
Anx 4		0.837										
PT 1						0.856						
PT 2						0.811						
PT 3						0.834						
PT 4						0.804						
PI 1										-0.579		
PI 2										-0.612		
PI 3										-0.743		
PI 4										-0.731		
LOC 1	0.773											
LOC 2	0.643											
LOC 3	0.781											
LOC 5	0.636											
PR 2										0.825		
PR 3										0.896		

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 11 iterations.

Table 7. Cronbach alpha and the reliability of scales.

Factor	Cronbach's alpha	Nofitems	Cases used
Behavioral Intention (BI)	0.895	3	851
Performance expectancy (PE)	0.929	6	857
Effort Expectancy (EE)	0.905	6	862
Social Influence (SI)	0.821	3	861
Perceived facilitating Condition (PFC)	.0825	2	869
Self-efficacy (SE)	0.871	6	855
Anxiety (Anx)	0.894	4	863
Perceived Trust (PT)	0.884	4	864
Personal Innovativeness(PI)	0.847	4	863
Locus of Control (LOC)	0.878	4	852
Perceived Risk (PR)	0.840	2	868

Table 8. Details of the sample collected and used for the analysis.

Bank	Completed	Percent
Jordan Islamic Bank	283	32.6%
Arab Bank	293	33.8%
Housing Bank	291	33.6%
Gender	Completed	Percent
Male	648	74.7%
Female	219	25.3%
Age	Completed	Percent
Less than 30	369	42.6%
30-40	288	33.2%
More than 40	210	24.2%
Education	Completed	Percent
High school and less	170	19.6%
Bachelor	507	58.5%
Graduate	190	21.9%
Use of Internet banking	Completed	Percent
Used	342	39.4%
Did not	524	60.4%

## 8. Discussion and Conclusions

The purpose of this study was to better understand the adoption of Internet banking within Jordan. The factors affecting intention to use Internet banking were explored using an Arabic instrument utilizing ten independent variables. One major contribution of this study is the establishment of a validated Arabic instrument in the area of technology acceptance. The instrument is based on a review of literature in this area. The instrument included items to measure eleven variables (one dependent and ten independent) and all were found to be reliable measures of the intended constructs. The only items excluded were questions; (Q13 and Q14) from the self-efficacy instrument, (Q1, Q2 & Q3) from the PFC instrument, (Q4) from the LOC instrument, and (Q1) from the perceived risk instrument.

Contributions of the study are as follows. This study contributed to the area by developing an Arabic instrument (using the backward translation method), and validating the instrument using a sample of Jordanian bank customers. The initial set of items yielded a reliable instrument that was used to predict behavioral intention in the context of Internet banking

in Jordan. IB in Jordan is booming and thus banks are in great need to understand their customers' attitudes and perceptions towards this technology. Without a well validated Arabic instrument, this process will yield misleading results. In IB environment and in Jordan specifically, no record of an Arabic instrument is available.

Future work and Implications for research and practice are as follows the instrument developed in this work opens doors for researchers to explore customer's attitudes towards IB. Also, this instrument is a building stone that can contribute to other types of technology testing. On the other hand, this work emphasizes the crucial need for more testing for all instruments with less than three items (PFC & PR) and more for those with less than three items. More items might improve the content validity of the instrument, and cover more dimensions of the instrument. To generalize the findings of this study, more research is encouraged on other technologies in the Middle East and using the Arabic instrument. Also, the translation process can affect the instrument used and thus more testing of the backward translation method will yield better results. Finally, other translation methods can be tested.

Internet banking in Jordan is a new technology that emerged from the needs of businesses to better serve their customers and reduce their operational costs. This work is important for banks to test the factors affecting their customers/employees acceptance of a technology. Limitations of the study are as follows. As stated in this study, behavioral intention is the closest construct that can be used as a surrogate for Internet banking usage. Using behavioral intention is rich, but does not replace exploring actual usage of a system. The results of factor analysis indicated that the instrument used (Arabic version) needs more validation. Also, variables that resulted in only two items might be a concern (PFC and PR) and warrant further study. Finally, this study generalizes only to bank customers in Jordan, Internet banking systems and for those who speak Arabic language.

## References

- [1] Abdul-Gader H. and Kozar A. "The Impact of Computer Alienation on Information Technology Investment Decisions: An Exploratory Cross-National Analysis," *Computer Journal of MIS Quarterly*, vol. 23, no. 3, pp. 535-559, 2005.
- [2] AbuShanab E., Md K., Pearson M., and Crosby L., "Self-Efficacy and End User Satisfaction: The Impact of Social Influence," in *Proceedings of the Decision Sciences Institute Conference Washington DC*, pp. 1-6, 2003.
- [3] Agarwal R. and Prasad J. "A Conceptual and Operational Definition of Personal Innovativeness in the Domain of Information Technology," *Computer Journal of Information Systems Research*, vol. 9, no. 2, pp. 204-215, 1998.
- [4] Ajzen I., *The Theory of Planned Behavior Organizational Behavior and Human Decision Processes*, Edward Elgar Publishing, USA, 1991.
- [5] Al-Gahtani S., "Saudi Arabia: Correlates of Perceived Innovation Attributes," *Computer Journal of Information Technology for Development*, vol. 10, no.1, pp. 57-69, 2003.
- [6] Al-Gahtani S. and King M., "Attitudes, Satisfaction and Usage: Factors Contributing to Each in the Acceptance of Information Technology," *Computer Journal of Behavior and Information Technology*, vol. 18, no. 4, pp. 277-297, 1999.
- [7] Al-Khaldi A. and Wallace S., "The Influence of Attitudes on Personal Computer Utilization Among Knowledge Workers: The Case of Saudi Arabia," *Computer Journal of Information and Management*, vol. 36, no. 4, pp. 185-204, 1999.
- [8] Armitage J. and Conner M., "Efficacy of the Theory of Planned Behavior: A Meta-Analytic Review," *Computer Journal of British Journal of Social Psychology*, vol. 40, no. 4, pp. 471-499, 2001.
- [9] Awamleh J. and Mahate A., "Internet Banking in Emergency Markets: The Case of Jordan – A Note," *Computer Journal of Internet Banking and Commerce*, vol. 8, no.1, pp. 41-62, 2003.
- [10] Bandura A., "Self-Efficacy Mechanism in Human Agency," *Computer Journal of American Psychologist*, vol. 37, no. 2, pp. 122-147, 1982.
- [11] Brislin R., "Comparative Research Methodology: Cross-Cultural Studies," *International Journal of Psychology*, vol. 11, no. 3, pp. 215-229, 1976.
- [12] Chau P. and Hu P. "Information Technology Acceptance by Individual Professionals: A Model Comparison Approach," *Computer Journal of Decision Sciences*, vol. 32, no. 4, pp. 699-719, 2001.
- [13] Cheung K. and Lee O., "Trust in Internet Shopping: Instrument Development and Validation through Classical and Modern," *Journal of Global Information Management*, vol. 9, no. 3, pp. 23-36, 2001.
- [14] Cheung W., Chang K., and Lai S., "Prediction of the Internet and World Wide Web Usage at Work: A Test of an Extended Triandis Model," in *Proceedings of Decision Support Systems*, California, pp. 83-100, 2000.
- [15] Compeau D. and Higgins A., "Application of Social Cognitive Theory to Training for Computer Skills," *Computer Journal of Information Systems Research*, vol. 6, no. 2, pp. 118-143, 1995.
- [16] Compeau D. and Higgins A., "Computer Self-Efficacy: Development of a Measure and Initial

- Test,” *Computer Journal of MIS Quarterly*, vol. 19, no. 2, pp. 189-211, 1995.
- [17] Davis D., “Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology,” *Computer Journal of MIS Quarterly*, vol. 13, no. 3, pp. 319-340, 1989.
- [18] Davis D., Bagozzi P., and Warshaw R., “User Acceptance of Computer Technology: A Comparison of Two Theoretical Models,” *Computer Journal of Management Science*, vol. 35, no. 8, pp. 982-1003, 1989.
- [19] Davis D., Bagozzi P., and Warshaw R., “Extrinsic and Intrinsic Motivation to Use Computers in the Workplace,” *Journal of Applied Social Psychology*, vol. 22, no. 14, pp. 1111-1132, 1992.
- [20] Deci L. and Ryan M., *Intrinsic Motivation and Self Determination in Human Behavior*, Plenum Press, New York, 1985.
- [21] Field A., *Discovering Statistics, Using SPSS for Eindows*, Sage Publications, London, 2000.
- [22] Fishbein M. and Ajzen I., *Belief Attitud Intention, and Behavior an Introduction to Theory and Research*, Addison-Wesley, Australia, 1975.
- [23] Hair J., Anderson R., Tatham R., and Black W., *Multivariate Data Analysis*, Upper Saddle River, Prentice Hall, New Jersey
- [24] Internet World Stats, <http://www.internetworldstats.com/index.html>, 2006.
- [25] Kay H., “The Relation Between Locus of Control and Computer Literacy,” *Computer Journal of Research on Computing in Education*, vol. 22 no. 2, pp. 464-475, 1990.
- [26] Lau S., “Strategies to Motivate Brokers Adopting On-Line Trading in Hong Kong Financial Market,” *Review of Pacific Basin Financial, Markets and Policies*, vol. 5, no. 4, pp. 471-489, 2002.
- [27] Lett W., Emic/Etic distinctions, Retrieved March 2004, <http://faculty.ircce.edu/faculty/jlett/Article%20on%20Emics%20and%20Etics.htm>, 2004.
- [28] Mathieson K., “Predicting User Intention Comparing the Technology Acceptance Model with Theory of Planned Behavior,” *Information Systems Research*, vol. 2, no. 3, pp. 173-191, 1991.
- [29] Moore G. and Benbasat I., “Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation,” *Computer Journal of Information Systems Research*, vol. 2, no. 3, pp. 192-222, 1991.
- [30] Pavlou A. “Consumer Acceptance of Electronic Commerce Integrating Trust and Risk with the Technology Acceptance Model,” *Computer Journal of International Electronic Commerce*, vol. 7, no. 3, pp. 101-134, 2003.
- [31] Rogers M., *The Diffusion of Innovations*, Free Press, New York, 1983.
- [32] Szajna B., “Empirical Evaluation of the Revised Technology Acceptance Model,” *Computer Journal of Management Science*, vol. 42, no.1, pp. 85-92, 1996.
- [33] Tan M. and Teo S., “Factors Influencing the Adoption of Internet Banking,” *Computer Journal of the Association of Information Systems*, vol. 1, no. 1, pp. 1-42, 2000.
- [34] Taylor S. and Todd A. “Assessing IT Usage the Role of Prior Experience,” *Computer Journal of MIS Quarterly*, vol. 19, no. 3, pp. 561-570, 1995.
- [35] Taylor S. and Todd A. “Decomposition and Crossover Effects in the Theory of Planned Behavior: A Study of Consumer Adoption Intentions,” *International Computer Journal of Business in Marketing*, vol. 12, no. 2, pp. 137-155, 1995.
- [36] Taylor S. and Todd P. “Understanding Information Technology Usage: A Test of Competing Models,” *Computer Journal of Information Systems Research*, vol. 6, no. 2, pp. 144-176, 1995.
- [37] Thompson L., Higgins A., and Howell M. “Personal Computing Toward a Conceptual Model of Utilization,” *Computer Journal of MIS Quarterly*, vol. 15, no. 1, pp. 167-187, 1991.
- [38] Triandis H., *Interpersonal Behavior*, Wadsworth Publishing Company, 1977.
- [39] Vallerand J., Deci I., and Ryan’s I., “Self-Determination Theory: A View from the Hierarchical Model of Intrinsic and Extrinsic Motivation,” *Computer Journal of Psychological Inquiry*, vol. 11, no. 4, pp. 312-318, 2000.
- [40] Vallerand J. and Bissonnette R., “Intrinsic, Extrinsic, and Amotivational Styles as Predictors of Behavior: A Perspective Study,” *Computer Journal of Personality*, vol. 660, no. 3, pp. 599-620, 1992.
- [41] Venkatesh V., “Determinants of Perceived Ease-of-Use Integrating Control, Intrinsic Motivation and Emotion into the Technology Acceptance Model,” *Computer Journal of Information Systems Research*, vol. 11, no. 4, pp. 342-365, 2000.
- [42] Venkatesh V. and Davis D., “A Model of the Antecedents of Perceived Ease of Use Development and Test,” *Computer Journal of Decision Sciences*, vol. 27, no. 3, pp. 451-481, 1996.
- [43] Venkatesh V. and Davis D., “A Theoretical Extension of the Technology Acceptance Model for Longitudinal Field Studies,” *Computer Journal of Management Science*, vol. 46, no. 2, pp. 186-204, 2000.
- [44] Venkatesh V., Morris G., Davis B., and Davis D., “User Acceptance of Information Technology:

Toward a Unified View,” *Computer Journal of MIS Quarterly*, vol. 27, no. 3, pp. 425-478, 2003.

- [45] Werner O. and Campbell T., “Translating, Working Through Interpreters, and Problem of Decentering,” *Computer Journal of a Handbook of Method in Cultural Anthropology*, vol. 5, no. 1, pp. 398-420, 1970.
- [46] Zint M., “Comparing Three Attitude-Behavior Theories for Predicting Science Teachers’ Intentions,” *Computer Journal of Research in Science Teaching*, vol. 3, no. 9, pp. 819-844, 2002.



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**Appendix A: The instrument used and validation process**

<b>Behavioral Intention</b>		<b>Coming from</b>	<b>Reference</b>	<b>Used in</b>	<b>Scale</b>	<b>Behavioral Intention</b>
1	I intend to use the system in the next <n> months	Behavioral Intention	Davis et al. 1989	UTAUT	1=>7	I intend to use IB in the next few months
2	I predict I would use the system in the next <n> months	Behavioral Intention	Davis et al. 1989	UTAUT	1=>7	I predict that I would use IB in the next few months
3	I plan to use the system in the next <n> months	Behavioral Intention	Davis et al. 1989	UTAUT	1=>7	I plan to use IB in the next few months

Existing reliability: 0.85, 0.88, 0.84. Source Venkatesh et al 2003 [Note: three values for three test stages]

<b>Performance Expectancy</b>		<b>Coming from</b>	<b>Reference</b>	<b>Used in</b>	<b>Scale</b>	<b>Performance Expectancy</b>
1	I would find the system useful in my job.	Perceive Usefulness	Davis 1989, Davis et al. 1989	UTAUT	1=>7	I expect IB will be useful in my life.*
2	Using the system enables me to accomplish tasks more quickly	Relative Advantage	Moore and Benbasat 1991	UTAUT	1=>7	Using IB will enable me to accomplish transactions more quickly.*
3	Using the system increases my productivity	Relative Advantage	Moore and Benbasat 1991	UTAUT	1=>7	Using IB will increase my productivity.*
4	If I use the system I will increase my chances of getting a raise	Outcome Expectations	Compeau and Higgins 1995	UTAUT	1=>7	Using IB will increase my chances of getting a raise.
5	Using the system would enhance my effectiveness on the job	Perceive Usefulness	Davis 1989, Davis et al. 1989	This Study	1=>7	Using IB will enhance my effectiveness*.
6	Use of the system can significantly increase the quality of output on my job	Job-Fit	Thompson et al. 1991	This Study	1=>7	Use of IB will significantly increase the quality of my transactions.*
7	If I use the system I will increase the quantity of output for the same amount of effort.	Outcome Expectations	Compeau and Higgins 1995	This Study	1=>7	If I use IB I will increase the quantity of output for the same amount of effort*.

Existing reliability: 0.88, 0.91, 0.92. Source Venkatesh et al 2003 [Note: three values for three test stages] \*Used in the study

<b>Effort Expectancy</b>		<b>Coming from</b>	<b>Reference</b>	<b>Used in</b>	<b>Scale</b>	<b>Effort Expectancy</b>
1	My interaction with the system would be clear and understandable	Perceived Ease of Use	Davis 1989, Davis et al. 1989	UTAUT	1=>7	I expect my interaction with the Internet would be clear and understandable
2	It would be easy for me to become skillful at using the system	Perceived Ease of Use	Davis 1989, Davis et al. 1989	UTAUT	1=>7	I expect it would be easy for me to become skillful at using IB
3	I would find the system easy to use	Perceived Ease of Use	Davis 1989, Davis et al. 1989	UTAUT	1=>7	I expect IB to be easy to use
4	Learning to operate the system is easy for me.	Ease of Use	Moore and Benbasat 1991	UTAUT	1=>7	Learning to operate IB will be easy for me.
5	I would find the system to be flexible to interact with	Perceived Ease of Use	Davis 1989, Davis et al. 1989	This Study	1=>7	I expect IB to be flexible to interact with
6	Working with the system is so complicated, it is difficult to understand what is going on.	Complexity	Thompson et al 1991	This Study	1=>7	Working with Internet is not complicated, it is not difficult to understand what is going on.

Existing reliability: 0.93, 0.89, 0.90. Source Venkatesh et al 2003 [Note: three values for three test stages]

<b>Social Influence</b>		<b>Coming from</b>	<b>Reference</b>	<b>Used in</b>	<b>Scale</b>	<b>Social Influence</b>
1	People who influence my behavior think that I should use the system	Subjective Norm	Ajzen 1991 (+ others)	UTAUT	1=>7	People who influence my behavior think that I should use IB
2	People who are important to me think that I should use the system	Subjective Norm	Ajzen 1991 (+ others)	UTAUT	1=>7	People who are important to me think that I should use IB
3	The senior management of this business has been helpful in the use of the system	Social Factors	Thompson et al 1991	UTAUT	1=>7	The senior management of the bank has been helpful in the use of IB
4	In general, the organization has supported the use of the system	Social Factors	Thompson et al 1991	UTAUT	1=>7	In general, the bank has supported the use of IB
5	People in my organization who use the system have more prestige than those who do not.	Image	Moore and Benbasat 1991	This Study	1=>7	People in my environment who use IB have more prestige than those who do not.

Existing reliability: 0.89, 0.91, 0.84. Source Venkatesh et al 2003 [Note: three values for three test stages]

<b>Facilitating Conditions</b>		<b>Coming from</b>	<b>Reference</b>	<b>Used in</b>	<b>Scale</b>	<b>Facilitating Conditions</b>
1	I have the resources necessary to use the system	Perceived Behavioral Control	Ajzen 1991, Taylor and Todd 1995	UTAUT	1=>7	I have the resources necessary to use IB
2	I have the knowledge necessary to use the system	Perceived Behavioral Control	Ajzen 1991, Taylor and Todd 1995	UTAUT	1=>7	I have the knowledge necessary to use IB
3	The system is not compatible with other systems I use	Perceived Behavioral Control	Ajzen 1991, Taylor and Todd 1995	UTAUT	1=>7	IB is compatible with other systems I use
4	A specific person (or group) is available for assistance with the system difficulties	Facilitating Conditions	Thompson et al 1991	UTAUT	1=>7	A specific person (or group) is available for assistance with IB difficulties
5	Guidance was available to me in the selection of the system	Facilitating Conditions	Thompson et al 1991	This Study	1=>7	Guidance was available to me in the usage of IB

Existing reliability: 0.84, 0.86, 0.81. Source Venkatesh et al 2003 [Note: three values for three test stages]

<b>Self-efficacy</b>		<b>Coming from</b>	<b>Reference</b>	<b>Used in</b>	<b>Scale</b>	<b>Self-efficacy</b>
1	... If there was no one around to tell me what to do as I go*	Computer self-Efficacy	Compeau and Higgins 1995	UTAUT	1=>7	... If there was no one around to tell me what to do as I go*
2	... If I could call someone for help if I got stuck*	Computer self-Efficacy	Compeau and Higgins 1995	UTAUT	1=>7	... If I could call someone for help if I got stuck*
3	... If I had a lot of time to complete the job for which the software was provided*.	Computer self-Efficacy	Compeau and Higgins 1995	UTAUT	1=>7	... If I had a lot of time to complete the job I started*.
4	If I had just the built-in help facility for assistance*	Computer self-Efficacy	Compeau and Higgins 1995	UTAUT	1=>7	... If I had just the built-in help facility for assistance*
5	... If I had never used a package like it before.*	Computer self-Efficacy	Compeau and Higgins 1995	This Study	1=>7	... If I had never used a system like it before.*
6	... If someone else had helped me get started.	Computer self-Efficacy	Compeau and Higgins 1995	This Study	1=>7	... If someone else had helped me get started.

\*I could complete a job or task using the system ... [Note: three values for three test stages]

\*I could complete a transaction using IB ...

Existing reliability: 0.82, 0.80, 0.84. Source Venkatesh et al 2003

**Appendix A: The instrument used and validation process (continued)**

<i>Anxiety</i>		Coming from	Reference	Used in	Scale	<i>Anxiety</i>
1	I feel apprehensive about using the system	Anxiety	Compeau and Higgins 1995	UTAUT	1=>7	I feel apprehensive about using IB
2	It scares me to think that I could lose a lot of information using the system by hitting the wrong key.	Anxiety	Compeau and Higgins 1995	UTAUT	1=>7	It scares me to think that I could lose a lot of information using IB by hitting the wrong key.
3	I hesitate to use the system for fear of making mistakes I cannot correct.	Anxiety	Compeau and Higgins 1995	UTAUT	1=>7	I hesitate to use IB for fear of making mistakes I cannot correct.
4	The system is somewhat intimidating to me.	Anxiety	Compeau and Higgins 1995	UTAUT	1=>7	IB is somewhat intimidating to me.

Existing reliability: 0.80, 0.81, 0.77. Source Venkatesh et al 2003 /Note: three values for three test stages/

<i>Personal Innovativeness</i>		Coming from	Reference	Used in	Scale	<i>Personal Innovativeness</i>
1	I heard about a new information technology, I would look for ways to experiment with it.	PIIT	Agarwal and Prasad 1998	This study	1=>7	I would look for ways to experiment with IB.
2	Among my peers, I am usually the first to try out new information technologies.	PIIT	Agarwal and Prasad 1998	This study	1=>7	Among my peers, I am usually the first to try out new information technologies.
3	In general, I am hesitant to try out new information technologies.	PIIT	Agarwal and Prasad 1998	This study	1=>7	In general, I am hesitant to try out new information technologies. (-vte)
4	I like to experiment with new information technologies.	PIIT	Agarwal and Prasad 1998	This study	1=>7	I like to experiment with new information technologies.

Existing reliability: 0.84. Source Agarwal & Parasad 1998

<i>Trust/ Trust Propensity</i>		Coming from	Reference	Used in	Scale	<i>Trust/ Trust Propensity</i>
1	This Web retailer is trustworthy	Trust.	Pavlou 2003	This study	Not clear (1=> 7)	<i>This Web retailer is trustworthy</i>
2	This web retailer is one that keeps promises and commitments	Trust.	Pavlou 2003	This study	Not clear (1=> 7)	<i>This web retailer is one that keeps promises and commitments</i>
3	I trust this web retailer because they keep my best interests in mind.	Trust.	Pavlou 2003	This study	Not clear (1=> 7)	<i>I trust this web retailer because they keep my best interests in mind.</i>
1	It is easy for me to trust a person/thing	Trust Propensity*	Cheung and Lee 2001	This study	1=>7	It is easy for me to trust IB systems*
2	My tendency to trust a person/thing is high	Trust Propensity*	Cheung and Lee 2001	This study	1=>7	My tendency to trust IB is high*
3	I tend to trust a person/thing, even though I have little knowledge of it	Trust Propensity*	Cheung and Lee 2001	This study	1=>7	I tend to trust IB, even though I have little knowledge of it*
4	Trusting someone or something is not difficult.	Trust Propensity*	Cheung and Lee 2001	This study	1=>7	Trusting the Internet is not difficult.*

\*Existing reliability: 0.78. Adapted from Koufaris and Hampton-Sosa 2002 (Internet)

\* Used in the study

<i>Perceived Risk</i>		Coming from	Reference	Used in	Scale	<i>Perceived Risk</i>
1	How would you characterize the decision to transact with this Web retailer? (significant risk/ Insignificant risk)	Perceived Risk	Pavlou 2003	This study	Not clear (1=> 7)	How would you characterize the decision to transact using IB? (risky/not risky)
2	How would you characterize the decision to transact with this Web retailer? (very negative situation/ Very positive situation).	Perceived Risk	Pavlou 2003	This study	Not clear (1=> 7)	How would you characterize the decision to transact using IB? (very negative/ Very positive).
3	How would you characterize the decision to buy a product from this Web retailer? (High potential for loss/ High potential for gain)	Perceived Risk	Pavlou 2003	This study	Not clear (1=> 7)	How would you characterize the decision to use IB? (High loss/ High gain)

Existing reliability: 0.88. Source Pavlou 2003

<i>Locus of Control</i>		Coming from	Reference	Used in	Scale	<i>Locus of Control</i>
1	I feel I need an experienced person nearby when I use the computer	Computer Locus of Control	Kay 1990	This study	1=>7	I don't need an experienced person nearby when I use IB*
2	I can make the computer do what I want it to do	Computer Locus of Control	Kay 1990	This study	1=>7	I can make the computer do what I want it to do*
3	I need someone to tell me the best way to use the computer	Computer Locus of Control	Kay 1990	This study	1=>7	I don't need someone to tell me the best way to use IB*
4	I feel confident about using the computer to store important information	Computer Locus of Control	Kay 1990	This study	1=>7	I feel confident about using the Internet to ake my financial transactions*
5	If I had a problem using the computer, I could solve it one way or another	Computer Locus of Control	Kay 1990	This study	1=>7	If I had a problem using the Internet, I could solve it one way or another*
6	When something goes wrong with the computer, I feel there would be little I could do about it	Computer Locus of Control	Kay 1990	This study	1=>7	When something goes wrong with the Internet, I feel there would be little I could do about it

Existing reliability: 0.87. Source Kay 1990 [a subset of the scale]

\* Used in the study



