

Use of self-service technology in the Lebanese banking sector: convenience, reliability, and suitability

Abdul-Nasser Kassar
Lebanese American University

Firas Samko
Lebanese American University

ABSTRACT

The banking sector benefited from the development of information solutions that shaped the operational processes. Self-service technologies emerged after massive dependence on information technology which became a standard for success for banking institutions. Customers' response for such innovations varies according to demographical differences and perceived attributes such as convenience, reliability, and suitability. Substantial research indicates that the demographics have a direct effect on usage of self-service technologies. Same goes for perceived attributes which changed the customer's view to banking services. The purpose of this paper is to study the effects of demographical characteristics and perceived attributes on the usage of banking self-service technologies in Lebanon. The study is conducted by using a survey questionnaire as a research instrument. The data is gathered and analyzed. By using different statistical approaches, the effects of demographics and attributes on the usage of self-service technologies are examined where a number of hypotheses are tested. The results are analyzed and interpreted leading to several recommendations for the improvement of banking self-service technologies.

Keywords: Self-service technologies, convenience, reliability, suitability.

INTRODUCTION

Many massive changes have affected the way banking institutions operate. These changes altered the way customers perceived banks. In addition, a great number of functions were added to banking operations leaving more complex options with the emergence of Information Technology (IT) (Eriksson et.al, 2008; Sayar and Wolfe, 2007). The rise of IT incited banks to adopt self-service technologies. For instance, personal tellers still exist, but automated teller machines (ATM) can now perform several of the teller's routine tasks. More recently, internet banking has evolved to carry out additional and more complex transactions. However, the emergence of self-service technologies (SSTs) was faced with rejection, especially that of banking due to its financial implications.

After the introduction of ATMs, many researchers tackled the problem of customer resistance to self-service technologies (Murdock et al, 1983; Stevens et al., 1986, 1989; Zeithaml et al., 1987). These studies lead to the proposition that research questions may need to be inclined beyond the prompt horizon of demographic and psychographic profiles, and investigate how adopters and non-adopters view these novelties. Leblanc (1990) analyzed the points of view of users and non-users of service automation; he was able to conclude that the main intention behind usage was convenience. At the same time, reliability and friendliness are also attributes to consider when evaluating the technology-based inferences. From the banking institutions' point of view, automated self-service users are no more looked at as customers only, but rather employees as they are more involved in the service (Honebein & Cammarano, 2005). Another perception of automation in the banking service is its competitive advantage and its use as a weapon of cost-effectiveness as presented by Davies et.al (1996). In the same context, (Hernando & Nieto, 2007) inferred that banks could cut costs pertaining to preservation of bank branches and employee remunerations when adopting self-service technologies. The two major factors affecting self-service selection are convenience and ease of transaction, which indicated that customers were mostly interested by "How the service is delivered" (McKennie, 1992). For instance, Kuisma et al. (2007) initiated that several non-users of internet banking find it tough, inappropriate, and relatively slow. Studies conducted by Ironfield and McGoldrick (1988) showed that consumer resistance to technical improvements is mainly predominant among the elder cohort and it is likely that the more a computer and technology trusting generation matures, the more the pro automation segment may advance. For example, some customers tend to avoid using internet banking because of the associated risk factor commonly criticized (Gerrard et.al, 2006). The information resulting from such links is valuable, mostly in supporting electronic retail banking managers determine their target customers.

OBJECTIVES OF THE STUDY

The Lebanese banking sector is a leader in the Middle East and North Africa region, and has a distinguished role internationally. However, the use of banking self-service technologies is not consistent with its leading role. For instance, only recently the usage of ATMs has become wide spread. Moreover, credit card transactions in Lebanon are too low compared to that in developed nations. Although internet banking services is offered by all Lebanese banks, its usage is almost negligible. This raises the need to investigate the use of self-service technologies in the Lebanese banking sector, its barriers and improvements.

The general purpose of this study is to distinguish users and non-users of self-service technologies in terms of demographic characteristics and the SSTs attributes, convenience, reliability, and suitability. Consequently, this study examines the clients' perceived attributes of banking self-service technologies in the Lebanese banking business. The study satisfies this objective by conducting an observed examination of the three perceived attributes, convenience, reliability, and suitability, on a random sample of users and non-users of banking SSTs. Within the paper the following inquiries are considered.

1. Which demographical characteristics affect the usage of self-service technologies of banks?
2. What are the effects of the perceived attributes of self-service technologies on adopting this innovation? In particular, what is the degree of influence that perceived attributes have on usage of self-service technologies?

METHODOLOGY AND STATISTICAL ANALYSIS

The study is conducted among Lebanese bank clients with various demographical backgrounds. Data will be collected through questionnaires distributed randomly to clients of several bank branches located throughout Lebanon. Out of the 400 distributed questionnaires, 120 responded to the survey. The questionnaire is composed of five parts or categories. The first part is related to demographics such as area, age, gender, education level, and career level. The second part of the questionnaire is related to the self-service technologies usage and the last three parts focus on the perceived attributes, convenience, reliability, and suitability.

Each category is composed of a set of questions related to a particular aspect or perception of SST. The questions are rated on a five-point Likert scale ranging from 1= strongly disagree to 5= strongly agree, with 3= neutral. Each set of questions, related to either the usage or a particular perceived attribute, is used to obtain a measure or a score. This is done by averaging the scores of the corresponding questions. Thus the following scores are obtained: average convenience score (ACS), average reliability score (ARS), average suitability score (ASS), and average usage score (AUS). The first three scores are used as the independent variables and AUS as the dependent. The data is analyzed to determine the effects of demographics and perceived attributes on the usage of self-service technologies in the Lebanese banking sector.

The 120 respondents in the sample are 41.7% females and 58.3% males. The age distribution is as follows: 10% in the below 20 years range, 51.7% in 20 to 30 years range, 21.7% in the 30 to 40 years range, 8.3% in the 40 to 50 range, and 8.3% in the above 50 range. A vast majority of the respondents live in the urban area (66.7%) while 33.3% in the rural regions. This is consistent with the overall population distribution in Lebanon. In addition, the educational level of the respondents varied between high school (23.3%), BS/BA or equivalent (56.7%), MS/MA/MBA or equivalent (16.7%), and Doctoral (3.3%). Most of the respondents are either part-timer employees, self-employed or non-management employees (23.3%, 10.0%, and 33.3% respectively), while 21.7% are operational managers, 6.7% are middle managers, and

5.0% are senior managers. The distributions reveal the fact that older people with an upper management position are less likely to respond to the survey.

The descriptive statistics for the convenience score revealed a mean of 3.9, a standard deviation of 0.55, and quartiles of 3.57, 3.93, and 4.29. This shows that the respondents tend to agree that self-service technologies are convenient. As for the reliability score, the mean is 3.44, the standard deviation 0.54, and the quartiles are 3.0, 3.43, and 3.71. Hence, respondents agree less that self-service technologies are reliable. The suitability score has a mean of 3.1, standard deviation of 0.47, and quartiles of 2.83, 3.17, and 3.33. Thus, respondents have a neutral perception towards self-service technologies being suitable. The descriptive statistics for the average usage score resulted in a mean of 3.7, a standard deviation of 0.73, and quartiles of 3.25, 3.75, and 4.25.

To study the effects of demographics on the perceived attributes, the following hypothesis is considered:

H1: A perceived attribute is the same across levels of a demographic category.

The following hypothesis is used to study the effects of demographics on the usage of self-service technologies in the Lebanese banking sector:

H2: There is a difference in usage relative to demographics.

Finally, the test conducted to determine the positive effects of the attribute on usage of self-service technologies can be stated as:

H3: A perceived attribute enhances usage of SSTs.

The testing procedure of the hypothesis H1 for the perceived attribute convenience versus gender resulted in a test statistics $z = -0.05$ and a corresponding p-value of 0.9587. This gives evidence that there is no significant difference in this perceived attribute between males and females. The same test conducted for reliability versus gender revealed a z-score of 0.75 and p-value of 0.4461 resulting in the conclusion that no significant difference exists among the genders regarding this attribute. As for the attribute suitability, the z-score was -1.34 and the p-value was 0.1793. Although the test is not significant, there are some indications that females tend to find SSTs more suitable than males.

ANOVA test was conducted to determine whether a difference in the convenience score exists across the educational levels. The test revealed an F-value of 11.73 and a corresponding p-value of 2.27E-05. This provides evidence that there is a difference across the educational levels. The post hoc analysis showed that there is a significant difference in the perception of convenience between clients with high school level education and those with graduate level education with p-value= 0.0001. Similarly, a significant difference was detected for high school level education and BS/BA level with p-value= 4.60E-06. In addition, no difference exists between the graduate degree level and BS/BA level with p-value= 0.3348.

The same test was conducted for the reliability score, where the test resulted in an F-value of 2.95 and a p-value of 0.0563. The test is almost significant at a 0.05 level. In fact, the mean reliability score for the high school level was found to be 3.143 which is considerably smaller than the mean scores, 3.495 and 3.477, for the other two categories.

As for the suitability versus educational level, the test statistics obtained was $F\text{-value}=25.17$ and the $p\text{-value}=8.10E-10$. The test is highly significant and a difference exists in the perceived suitability attribute across the education levels. The post hoc analysis showed a significant difference between high school and graduate levels, and between high school and BS/BA levels. However, the test indicated no significant difference between the graduate and BS/BA levels.

The test was conducted relative to the age categories. The results obtained indicated the following. No significant differences were detected in the convenience and reliability scores. As for the attribute suitability, the ANOVA test was significant with a $p\text{-value}=0.0001$. Significant differences were found between the following age categories. The age category of people in the range of 50 years and older was found to be different than all other categories except for the 41 to 50 range. The same was found to be true for the 41 to 50 range. As for the 31 to 40 range, a difference was found with the 20 to 30 range. Finally, no difference significant difference was detected between 20 to 30 and less than 20 ranges.

The above tests were conducted to determine the effects of the demographical characteristics on the usage of SSTs (H2). The findings were as follows. No significant difference exists in usage among the gender. The test was significant relative to education and age where the results were almost identical with those found for the suitability score.

Next correlation analysis was conducted to determine which demographical and perceived attributes affect the usage of SSTs. The correlation matrix, Table 1, indicates that the usage score is negatively correlated at a level of significance of 0.01 with age (correlation coefficient of -0.413), and positively correlated with educational level (correlation coefficient of 0.388), convenience score (correlation coefficient of 0.63), reliability score (correlation coefficient of 0.492), and suitability score (correlation coefficient of 0.566). The matrix shows that there is a high correlation with the aforementioned demographical characteristics and perceived attributes of SSTs. This leads to the conclusion that usage of SSTs is dependent on age; older people tend to use SSTs less. Moreover, all perceived attributes positively affect the usage of SSTs, but in different degrees. With convenience being the highest and reliability being the lowest, Lebanese banks should put emphasis on conveying the convenience and reliability behind using SSTs.

Regression analysis was conducted to further investigate the significance of the effects of the demographics and the perceived attributes on the usage of SSTs. First, we conducted the analysis using perceived attributes scores, ACS, ARS, and ASS, as the independent variables and the usage score as the dependent variable. A summary of the analysis is provided in the Tables 3 and 4. The ANOVA table showed that the model is highly significant and the significant variables for this model, at a 0.01 level of significance, are the convenient and suitability scores. On the other hand, the reliability is not statistically significant.

Similar analysis was conducted where demographics were introduced along with the perceived attributes scores. The output is given in Tables 4 and 5. The ANOVA table showed that the model is highly significant. The regression output table for the individual variables revealed that age is highly significant at level of significance of 0.01. On the other hand, educational level and ACS are significant at a level of 0.05.

RESULTS AND DISCUSSION

The objective of this research was to examine the effects of the different demographical aspects and the perceived attributes (convenience, reliability, and suitability) of self-service technologies on the usage of SSTs. The statistical analysis showed that usage of self-service technologies is affected by the different demographic aspects. Age and career level were singled out as having a major effect on the usage of self-service technologies in banking. In particular, the study revealed that younger people tend to use SSTs more frequently. Similarly, more educated persons are more inclined to the use of self-service technologies.

The study verified that the perceived attributes of self-service technologies have major effects on usage of SSTs. All the perceptions scores had positive effects on usage. In particular, the strongest attributes were determined to be convenience and suitability, and to a less extent reliability was also correlated with usage and demonstrated a positive relationship. Further analysis showed that convenience was the most important factor for respondents, when considering the usage of banking SSTs.

CONCLUSION

The research aims at recognizing the degree to which demographical characteristics and perceptual attributes affect the usage of self-service technologies in the banking sector. The relationships were tested empirically by gathering information through a valid questionnaire circulated among Lebanese bank clients. The results of the statistical analysis showed that age and educational level, along with convenience, reliability, and suitability attributes have major effects on the usage of SSTs. Further conducted analysis showed that the most significantly affecting attribute is convenience.

For further research, one could examine whether these findings are also common in other markets, or concentrated in the Lebanese banking sector. In another direction, the effects of demographics and perceived attributes of self-service technologies could also be examined in contexts other than the banking sector.

MANAGERIAL IMPLICATIONS

This study adds to the importance of self-service technology, the expectations and perceptions of customers coming from different demographical backgrounds. Based on the provided information, banking institutions should be shifting their concentration towards the expected reliability of the service. Reliability is a vital aspect for customers perceiving it essential in their service course. Moreover, a major importance should be given to the concurrent strong pillars such as convenience while trying to diffuse the service. This will allow banks to create a safe, reliable, and consistent environment for self-services technologies to be dispersed and widely used among target customers.

REFERENCES

Davies, F., Moutinho, L., & Curry, B. (1996). *ATM users' attitudes: a neural network analysis. Marketing Intelligence & Planning* 14(2), 26–32.

Eriksson, K., Kerem, K., & Nilsson, D. (2008) 'The adoption of commercial innovations in the former Central and Eastern European markets. The case of internet banking in Estonia', *International Journal of Bank Marketing*, 26(3), 154-69

Gerrard, P., Cunningham, J. B. & Devlin, J. F. (2006). *Why consumers are not using internet banking, Journal of Services Marketing*, 20(3), 160-8.

Hernando, I. & Nieto, M. J. (2007). *Is the internet delivery channel changing banks' performance? The case of Spanish banks, Journal of Banking and Finance*, 31(4), 1083-99.

Honebein, C. P. & Cammarano, F. R. (2005). *Creating do-it-yourself customers: how great customer experience build great companies, Journal of Consumer Marketing*, 24(5), 322-322.

Ironfield, C. & McGoldrick, P. J. (1988). *EFTPoS systems-determinants of shoppers' awareness and usage, International Journal of Retailing*, 3 (4), 24-42

Kuisma, T., Laukkanen, T., & Hiltunen, M. (2007). *Mapping the reasons for resistance to internet banking: a means-end approach, International Journal of Information Management*, 27 (2), 75-85.

Leblanc, G. (1990). *Customer motivation: use and non-use of automated banking, International Journal of Bank Marketing*, 8 (4), 36-40.

McKechnie, S. (1992). *Customer buying behavior in financial services: an overview, International Journal of Bank Marketing*, 10(5), 4-12.

Murdock, G.W., & Franz, L. (1983). *Habit and perceived risk as factors in the resistance to use of ATMs, Journal of Retail Banking*, V (2), 20-9.

Sayar, C. & Wolfe, S. (2007). *Internet banking market performance: Turkey versus the UK*, *International Journal of Bank Marketing*, 25 (3), 122-41.

Stevens, R. E., Carter, P. S., Martin, R. T., & Cogshell, D. (1986). *A comparative analysis of users and non-users of automatic teller machines*, *Journal of Retail Banking*, 8(1) (2), 71-8.

Stevens, R. E., Carter, P. S., Martin, R. T. & Cogshell, D. (1989). *Non adopters of automatic teller machines*, *Akron Business and Economic Review*,20(3), 50-78.

Zeithaml, V. A. & Gilly, M. C. (1987). *Characteristics affecting the acceptance of retailing technologies: a comparison of elderly and non-elderly consumers*, *Journal of Retailing*, 63(1), 49-68.

Table 1

Correlations

		Age	Gender	Area	Educational Level	Career Level	ACS	ARS	ASS	AUS
Age	Correlation	1	-.069	.123	-.355**	.283**	-.155	-.175	-.412**	-.413**
	Sig. (2-tailed)		.452	.182	.000	.002	.090	.056	.000	.000
Gender	Correlation	-.069	1	.012	.138	.080	.010	-.094	.110	.065
	Sig. (2-tailed)	.452		.897	.134	.382	.911	.308	.232	.481
Area	Correlation	.123	.012	1	-.048	.168	-.201*	-.041	-.149	-.041
	Sig. (2-tailed)	.182	.897		.603	.066	.028	.658	.104	.660
Educational Level	Correlation	-.355**	.138	-.048	1	.181*	.215*	.093	.339**	.388**
	Sig. (2-tailed)	.000	.134	.603		.048	.019	.311	.000	.000
Career Level	Correlation	.283**	.080	.168	.181*	1	.075	.026	-.057	.009
	Sig. (2-tailed)	.002	.382	.066	.048		.415	.775	.537	.925
ACS	Correlation	-.155	.010	-.201*	.215*	.075	1	.539**	.531**	.630**
	Sig. (2-tailed)	.090	.911	.028	.019	.415		.000	.000	.000
ARS	Correlation	-.175	-.094	-.041	.093	.026	.539**	1	.568**	.492**
	Sig. (2-tailed)	.056	.308	.658	.311	.775	.000		.000	.000
ASS	Correlation	-.412**	.110	-.149	.339**	-.057	.531**	.568**	1	.566**
	Sig. (2-tailed)	.000	.232	.104	.000	.537	.000	.000		.000
AUS	Correlation	-.413**	.065	-.041	.388**	.009	.630**	.492**	.566**	1
	Sig. (2-tailed)	.000	.481	.660	.000	.925	.000	.000	.000	

* Significant at .05 (two-tail)
 **Significant at .01 (two-tail)

Table 2

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30.232	3	10.077	35.380	.000 ^a
	Residual	33.041	116	.285		
	Total	63.273	119			

a. Predictors: (Constant), ASS, ACS, ARS
 b. Dependent Variable: AUS

Table 3

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.311	.395		-.786	.433
	ACS	.567	.112	.425	5.047	.000
	ARS	.140	.117	.103	1.190	.236
	ASS	.431	.132	.282	3.268	.001

a. Dependent Variable: AUS

Table 4

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	35.925	8	4.491	18.226	.000 ^a
	Residual	27.348	111	.246		
	Total	63.273	119			

a. Predictors: (Constant), ASS, Career Level, Gender, Area, Educational Level, ACS, Age, ARS

b. Dependent Variable: AUS

Table 5:

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.273	.534		-.512	.610
	Age	-.153	.052	-.223	-2.932	.004
	Gender	.032	.095	.022	.338	.736
	Area	.167	.101	.108	1.661	.100
	Educational Level	.162	.072	.165	2.257	.026
	Career Level	-.004	.036	-.009	-.122	.903
	ACS	.595	.107	.446	5.534	.000
	ARS	.187	.113	.138	1.653	.101
	ASS	.178	.138	.116	1.291	.199

a. Dependent Variable: AUS

