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Factors influencing the use of internet banking in Mauritius

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Abstract

Progress in information technology has enormously contributed in devising flexible payment methods in the banking sector. Internet banking is one such channel. The paper primarily aims to identify the factors affecting the adoption of internet banking in Mauritius. A survey of 100 respondents holding a bank account was carried out using stratified random sampling. A factorial analysis was performed which identified the motivators for internet banking adoption to be the ease of use, availability of infrastructure, awareness of the service, security and perceived usefulness. On the side of non-users, the study reveals that lack of security, lack of assistance, the low level of awareness, and no perceived ease of use to be the main inhibitors that refrain customers from adopting the service.

1. Introduction

The banking sector plays a vital role in the global economy. Traditionally, 'high street presence' was considered as the sine qua non condition for success in the banking sector. This provided banks with a ubiquitous presence which enabled greater customer contact and reassured customers that the bank has substantial resources which acts as a security for their savings [20]. However, the banking landscape has changed during the last decade. The widespread adoption and use of the internet has made it possible for banks to offer their products and services over the internet. This has led to benefits such as: cost savings, increased customer base, delivery of services in an innovative manner, increased marketing and communication possibilities, mass customisation and development of non-core businesses [17]. Mauritian banks have recognised that the internet has tremendous potential for creating business opportunities and have started to offer Internet Banking (IB) services. Out of 19 companies holding a banking license in Mauritius, 9 offer IB services [3]. This shows that IB is still in its development phase. Latest statistics reveal an upward trend in the number of IB customers and transactions [4]. It is therefore important to understand the growing trend towards IB and what prevents non-adopters to jump onto the band wagon.

The main objective of this study is to develop an understanding of the factors which persuade and hinder the use of IB among Mauritian individuals. A similar study was conducted by [24] in Mauritius but without any theoretical underpinning. This study uses the Technology Acceptance Model (TAM) as the framework to investigate factors influencing IB adoption in Mauritius.

2. Literature Review

IB is "an internet portal that offers the customers a variety of banking services like transferring of funds, payment of bills or purchase of goods or services" [23]. Since this is a new distribution channel for the delivery of banking services [7] it is therefore important to understand and assess customers' intention to use IB services.

Several competing theoretical approaches, like the Technological Acceptance Model (TAM), Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB) and Decomposed Theory of Planned Behavior (DTPB), have been used to investigate the determinants of acceptance and use of new information technology [32]. Considering the other theories' stumpy predictive power, the TAM has been proved to be superior to the other models [34]. Moreover, [13] highlighted the suitability of the TAM for studying the adoption of IB.

TAM involves two primary predictors for the potential adopter- Perceived Usefulness and Perceived Ease of Use.

Perceived usefulness is defined as "the degree to which a technology is able to provide a means-end relationship, that is, the given technology as a means to a desired end" [11]. Perceived ease of use refers to "the extent to which a person believes that using a particular system would be free of effort" [10]. [23] theorized that perceived ease of use demonstrates the degree to which an invention is seen as being not too difficult to understand, learn or operate. One of the attributes of Perceived Ease of Use as suggested by [25] is the complexity associated with the innovation, and in their study the latter was found to have the most significant relationship with adoption across a broad range of innovation types.

Several other factors have the power to influence IB adoption, [10] refers to them as external variables. In a research by [14], the customers' level of trust in e-banking was confirmed to have a considerable effect on the consumer's choice of adopting this technology and for its continued usage. An Australian study by [26] highlighted awareness as one of the main factors hindering the migration of consumers to IB. Through observations and narrative analysis of IB customers, [5] identified issues like slowness, poor navigational possibilities, poor interactivity and critical incidents such as lack of help by the providers of IB service capable of deterring customers from adopting the service.

3. Research Methodology

Quantitative research in the form of a survey questionnaire was designed to meet the research objectives. The design of the questionnaire was made as simple as possible, clear and easily understandable so as to avoid any confusion and thus not deterring the participation of the bank customers which is of paramount importance [33]. The questionnaire was devised using literature on IB and technology related studies [1], [5].

The first part of the questionnaire related to the biographical details of the respondents. Section 2 covered the factors affecting the decision of IB users, while section 3 considered the non-users of IB and the factors affecting their decision. A 5-point Likert scale was used in sections 2 and 3.

The population for the research consisted of every person having a bank account. In the absence of a list containing all persons holding a bank account which would have been ideal to perform simple random sampling, a stratified random sample was used with age as stratum for this survey.

From the 100 anonymous questionnaires sent, only 92 of them were recovered, 6 were missing and 2 had to be discarded since they were wrongly filled in.
The statistical software SPSS version 17.0 was used to quantify and analyze the data. Basically, a factor analysis was performed for both users and non-users of IB.

4. Analysis and Findings

4.1. Factor Analysis

4.1.1. Users of Internet Banking. A Factor analysis was carried out on the data. It was ensured that there exists some degree of correlation between the variables, since this condition is actually the prerequisite for such analysis.

The value of the Kaiser-Meyer-Olkin indicates that the sample is adequate enough for a factor analysis (greater than the required 0.5). In fact, values between 0.5 and 0.7 are considered excellent [18], indicating that the analysis should produce distinct and reliable factors.

The Barlett's Test of Sphericity gives an indication as to whether the variables are inter-related. In fact, it tests the null hypothesis:

Ho: original correlation matrix is an identity matrix
Note: if R-Matrix was an identity matrix, then all correlation coefficients would be zero.

In this case (Table 7), we conclude that $p < 0.001$, meaning: the R-matrix is not an identity matrix; there exist some relationships between the variables; the null hypothesis is rejected; factor analysis is appropriate.

Table 7. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.640
Bartlett's Test of Sphericity	Approx. Chi-Square	538.760
	df	153
	Sig.	.000

According to the Kaiser principle, only those factors with eigenvalues greater than 1 were maintained for further analysis. Hence, after extraction, the analysis was restricted to 5 factors.

The rotated factor matrix was considered to reorganize the factor components. Note that factor loadings less than 0.4 have been suppressed, as a general rule. Also, the variables are listed in the

following tables, in the order of size of their factor loadings.

The reliability of each of the constructs was evaluated by the Cronbach's Alpha coefficient. All of the coefficients were higher than 0.7 for all the factors. The variances of the components are also illustrated. For instance, we can notice that factor 1 explains 31.956 % of the total variance, while the other factors would have relatively low contributions (Table 8a).

Table 8a. Rotated Component Matrix

Factor 1- Ease of Use	
Various services can be accessed at the same time	.829
Banking services are available more handily	.771
Flexible to interact with Internet Banking	.685
Easy to learn to use Internet Banking	.674
Require no further knowledge apart from being simply acquainted to using internet	.598
Cronbach Alphas	**.821**
% Variance	**31.956**
Cumulative Variance	**31.956**

Table 8b. Rotated Component Matrix

Factor 2- Availability of Infrastructure	
Bank provides sufficient training, guide & manuals	.774
The bank's website is clear, user-friendly & bank focuses on interactivity, navigation & security	.761
Availability of help simplifies navigation	.740
Bank helps quickly in technical & non-technical issues	.702
Cronbach Alphas	**.799**
% Variance	**16.627**
Cumulative Variance	**48.583**

Table 8c. Rotated Component Matrix

Factor 3- Awareness of the Service	
I have enough info about Internet Banking	.875
I'm aware of the benefits & risks in Internet Banking	.814
I have enough info about how to use Internet Banking	.796
Cronbach Alphas	**.836**
% Variance	**10.695**
Cumulative Variance	**59.278**

Table 8d. Rotated Component Matrix

Factor 4- Security	
I trust in the ability of the bank to protect my confidentiality	.862
Bank is able to provide me with the necessary security	.848
Use of digital signatures, encryption & authororisation mechanisms provide a more secured Online Banking	.696
Cronbach Alphas	**.808**
% Variance	**8.494**
Cumulative Variance	**67.772**

Table 8e. Rotated Component Matrix

Factor 5- Perceived Usefulness	
I'm aware of the different services being provided online	.850
Accounts paid & funds transferred without queues	.655
Online services are available 24hr a day	.648
Cronbach Alphas	**.750**
% Variance	**6.223**

Cumulative Variance	73.994

Exraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization
a. Rotation converged in 9 iterations.

The statements around factor 1 give evidence of 'perceived ease of use'. For instance they seem to relate to the conclusion that the usage of the service would be free of effort [10]. In addition, no further knowledge is required apart from simply be acquainted to using the internet. Factor 2 basically highlights the 'availability of infrastructure' set by banks to enhance the provision of IB; a clear website, good interaction and excellent navigation, and help in technical and non-technical issues [5]. The third factor is strictly concerned with the 'awareness of the service' [12]. Factor 4 reflects the 'security' aspect of IB, as it is concerned with the ability of the bank to provide a secured service through protecting confidentiality of customers by the use of digital signatures, encryption and authorization mechanisms [27]. The last factor reflects the extent to which customers find IB useful. This provides evidence of 'perceived usefulness'. For instance, besides being a 24hr-bank, the customers acknowledge that accounts can be paid and funds transferred without queues, and also different services are available online. This is in line with the work of [33] who emphasized on the degree of convenience that the customers can attribute to the service to form their opinion of the latter's perceived usefulness.

4.1.2. Non-Users of Internet Banking. A similar approach was conducted for non-users of IB. The precondition for the factor analysis was confirmed, that is, the variables are inter-related.
Both the Kaiser-Meyer-Olkin and the Barlett's Test of Sphericity reveal that the data is fit for the analysis (See Table 9).

Table 9. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.723
Bartlett's Test of Sphericity	Approx. Chi-Square	356.025
	df	91
	Sig.	.000

Only 4 factors were retained for the analysis. The test of reliability (Cronbach's Alpha coefficient) was performed for each of the component factor, as shown in the following tables.

Table 10a. Rotated Component Matrix	
Factor 1- Security	
Can easily be fooled by hackers; prefer not taking the risk	.883
Internet Banking is insecure	.862
Bank will not be able to protect privacy	.856
No trust in the service	.830
Cronbach Alphas	**.912**
% Variance	**38.026**
Cumulative Variance	**38.026**

Table 10b. Rotated Component Matrix	
Factor 2- Assistance to Customers	
Sufficient support of help not provided by bank	.884
Bank cannot quickly help in technical & non-technical issues of Internet Banking	.854
Difficult to understand the help provided	.810
Guide, pamphlets & manuals to support usage not provided by bank	.629
Cronbach Alphas	**.839**
% Variance	**16.730**
Cumulative Variance	**54.756**

Table 10c. Rotated Component Matrix	
Factor 3– Awareness of the Service	
Not aware of the benefits & risks of Internet Banking	.861
Not aware about the different services being provided online	.827
Not aware of the service	.790
Cronbach Alphas	**.833**
% Variance	**13.255**

Cumulative Variance	68.011
Table 10d. Rotated Component Matrix	
Factor 4- No Perceived Ease of Use	
Complicated to use Internet Banking	.800
Interaction not clear and flexible with Internet Bank	.766
No Benefit; No difference between Traditional Banking and Internet Banking	.682
Cronbach Alphas	**.781**
% Variance	**9.645**
Cumulative Variance	**77.656**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Factor 1 can be categorized as the customers' perception about the 'security' of the system. The bank customers do not use IB because of a lack of trust in the bank's ability to provide a secured service and protect their privacy [2], [1], [26]. The second factor can be tagged to relate to the 'level of assistance' provided by the bank to online customers. The customers abstain from using IB because of a lack of help on websites to conduct online transactions [5]. Factor 3 can be expressed as the 'level of awareness' of the bank customers. Generally, the latter claim that they are not aware of the services, its benefits and risks [8], [29]. Factor 4 summarises issues about the inability of customers to recognize the 'perceived ease of use' of IB. Accordingly, it is not easy and flexible to interact with the internet bank [15].

5. Conclusion and Managerial Implications

The study has attempted to describe the IB phenomenon principally by investigating the attitudes and behavior of bank customers when it comes to deciding upon the choice to adopt the service. From the point of view of users of IB the motivators for the adoption of the service are: ease of use, availability of infrastructure, awareness, security, and perceived usefulness. On the other hand, according to non-users of IB, the main barriers to the adoption are: lack of security, lack of assistance, low level of awareness, and no perceived ease of use.

The findings can have important implications for various parties but more particularly for the banking sector. The reasons for non –adoption can help banks to devise strategies to increase their customer base so as to take non-adopters on board and at the same time take corrective actions. The results must however, be interpreted with caution taking into account the limited sample size.

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