Adoption of Self Service Technologies (SST) - A study on the intention of Management students to use Internet Banking Services

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ABSTRACT

Banks in India have been progressively offering Self Service Technology (SST) based services necessitated by a mix of factors like severe competition, the need to lower service costs and provide convenience to customers. Beginning with the Automated Teller Machine (ATM), Banks now offer a range of SST based services like Internet Banking, Mobile Banking etc. The educated youth of India have readily embraced the Information Technology (IT) based products and services in India and shown a penchant for trying out ecommerce. In view of this important fact, a study on their attitudes towards technology based Banking Services throws up interesting insights. This paper studies and analyzes the factors influencing Management students' intention to use internet banking services.

Introduction

Banks in India have been focused on progressively offering technology based services to the customer from the mid nineties. This has been necessitated by various factors namely the severe competition in the industry after the opening up of the sector, the need to reduce costs and the requirement for providing convenience to customers who are becoming more demanding by the day. This technology based revolution started with the Automated Teller Machine (ATM) –A self service technology (SST) and the debit cards and was followed quickly by innovations like core banking (customer becoming a customer of the entire Bank rather than of the Branch as the branches are interlinked). The next stage was to look for low cost and convenient alternate delivery channels for the customer. Internet Banking –another SST with its cost just being one-tenth of that of Branch Banking and also accessible on a 24x7 basis perfectly fit the bill for Banks. Initially, the Internet Banking service just offered information about the Bank's products and services but now even money based transactions are enabled. Mobile Banking is another SST being aggressively promoted by the Banks and slowly registering progress.

The educated youth in India have become the fulcrum around which the Information Technology based products and services evolved in India. The management students – forming a part of the educated youth market segment has preferred to use e-commerce and undertake online transactions wherever it has been convenient. So it makes immense sense for Banks to

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understand from this segment as to whether they would use Internet Banking or prefer the traditional Branch Banking services, given the fact that it required skills to operate an Internet enabled computer and also that instances of fraud and the resultant security issues have cropped up. Moreover, the studies on Internet Banking in India have been far and few.

There is an increasing awareness to protect the environment. Internet Banking eliminates the need to use paper. Internet Banking now offers a wide range of money based transactional services thereby minimizing the need to drive down to the Bank branch. In other words Internet Banking is a form of Green Banking.

This paper aims to explain the factors influencing Business Management students' intention to use internet banking in India with special reference to Chennai city. The theoretical framework of the paper is based on the model of Technology Acceptance Model (TAM) which was further extended to include two additional constructs. Of the five dimensions of the study, namely Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Security (SEC), Web Interface (WI) and Intention to Use (BI), PU and PEOU are taken from TAM. In addition, this study proposed the constructs of Security (SEC) and Web Interface (WI) in order to further delve into the factors determining the management student's intention to use Internet Banking.

This study undertook extensive literature review to understand the work done in the field in the past and it was observed that work was mainly done outside India.

Review of literature

There have been many studies focusing on Internet Banking as a delivery channel across the developed countries. However, the studies in the Indian context have been far and few. This Literature Review therefore relies more on the work done abroad.

As customers continue to become more familiar and comfortable with banking technologies, it is critical that firms understand how to best manage SSTs. Furthermore, SSTs can provide tremendous cost savings if they are widely used. However, they can be very costly if not introduced correctly. For example, customer use of online banking continues to grow rapidly. (James M. Curran and Matthew L. Meuter, 2007)

The Technology Adoption Model (TAM) has been researched extensively. The model has received wide acceptance and support worldwide. Extension of this model to include additional constructs has been a practice followed to deal specifically with the issue of the acceptance or the Behavioural Intention (BI) to use Internet Banking. In addition to the TAM constructs of Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), this study also analyses the constructs of Web Interface (WEBINT) and Security (SEC).

Perceived Usefulness

Perceived usefulness (PU) is defined as the users perception that using the product/service will increase their performance (Davis, 1989).

There are two distinct populations: 1) repeat customers, i.e., those who have already used the e-vendor website and 2) potential customers, i.e., those who have yet to use the website. The two populations have distinctly different beliefs and assessments and related behavioral intentions, specifically the intention to purchase

online. The data suggest that the two populations are distinct in the relative importance of trust and of TAM, specifically PU. Recognizing the existence of two such populations and targeting each population with an appropriate marketing strategy should be beneficial to firms engaged in e-commerce. (Gefen Karahanna, E and Straub, D.W. 2003)

The following hypothesis is therefore proposed:

H1: Perceived usefulness is significantly associated with the behavioral intention to use Internet banking.

Perceived ease of use

PEOU denotes the degree of ease with which the user can effortlessly use the product/service. (Davis, 1989). Research done over several years indicates the significant effect of perceived ease of use on the behavioral intention to use. (Davis et al, 1989, Venkatesh and Morris, 2000).

By boosting the ease of use of Internet Banking services, combined with bank defined incentives, Banks would stand a better chance to increase the adoption rate of Internet Banking users, and

from a management's perspective, it may be worthwhile to move these factors to the forefront of their Internet Banking marketing programmes. (Nazim Z Hosein, 2009)

The following hypothesis is therefore proposed:

H2: Perceived ease of use is significantly associated with the behavioral intention to use Internet Banking.

Web Interface

Managers who are offering Internet Banking services should consider placing a high priority on demonstrating the ease of the use of technology and communicating its services and value added features through a well designed web interface. (Patrick Y.K. Chau and Vincent S.K.Lai, 2003)

Instrument to measure Service Quality in Internet Banking comprises of the following dimensions 1. Attention 2. Web Interface 3. Trust 4. Attention and 5. Credibility (Chanaka Jayawardhena, 2004)

It is therefore proposed that

H3: Web Interface is significantly associated with the behavioral intention to use Internet Banking.

Security

Accuracy, security, transaction speed, user friendliness, user involvement and convenience were the most important quality attributes in Internet based e-banking (Liao and Cheung, 2002).

Another critical aspect to creating trust is ensuring online security. Internet security features such as firewalls, filtering routers, call back modems, encryption, biometrics, smart cards, digital certification and authentication can help to improve customer perceptions in online banking. (Mukherjee and Nath, 2003)

Perceived security is the most important determinant of e-banking adoption. Since customer trust is hard to gain and easy to lose, the internet banking providers should strive to maintain a good record by eliminating any potential security threats in a proactive manner. The internet transactions can be authorized, for instance, with a code sent to the mobile phone of the account

holder or with a non-reusable password from a transaction authentication number (TAN) list posted to the user by mail. Alternatively, the bank can supply the client with a security token which is synchronized with the bank's sever and frequently generates new authorization keys. (Michal Polasik and Tomasz Piotr Wisniewski, 2009)

It is therefore proposed that

H4: Security is significantly associated with the behavioral intention to use Internet banking.

Research model

Based on the Literature Review, a research model for the study is presented below. The model is proposed to study a sample of Indian postgraduate management students in Chennai city in order to explain the Behavioural Intention to utilize Internet Banking Services.

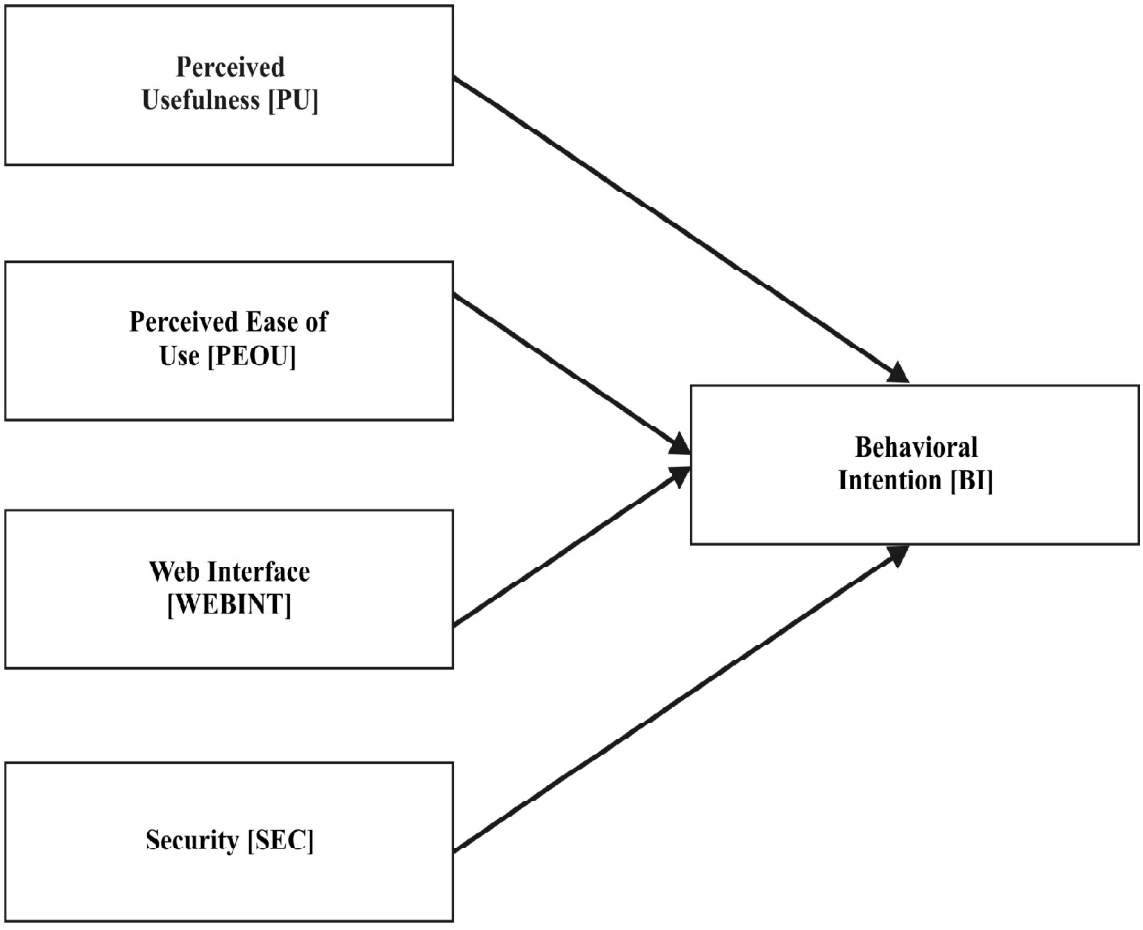


Figure 1 : Research Model for Behavioural Intention to use Internet banking

Methodology

A survey was conducted among the full time Management (MBA and PGDM) students of Chennai, India to obtain the data for this study. The students had no work experience or work experience up to 1 year. All the respondents were reasonably comfortable using computers and executing Internet based operations. The respondents had a basic awareness of Internet Banking but had not actually experienced the range and power of the Internet Banking Service.

In view of this fact, along with every questionnaire, a fact sheet on the range of services available through Internet Banking was also circulated and respondents were instructed to read it

before filling up the questionnaire. The data for the study was collected via a structured questionnaire. Likert's five-point scale was used in the questionnaire to measure all concepts with the scale ranging from "strongly disagree" (1) to "strongly agree" (5). The questionnaire was tested on a few fellow academics for its suitability, before going ahead with the study. The instrument was also tested for its reliability using Cronbach Alpha. Out of the 280 questionnaires given, 218 were returned and 201 were finally usable. The other statistical tools used in the study were Factor Analysis, Correlation and Regression Analysis.

Data Analysis was done using SPSS package Version 17. From the analysis, it was inferred that Perceived Usefulness (PU), Web Interface (WEBINT) and Security (SEC) significantly impacted the Behavioural Intention (BI) to use Internet Banking Services while Perceived Ease of Use (PEOU) was not that significant.

Table 1 : Profile of respondents

S.No	Item	No. of respondents	Percentage
1	Male	148	73.6%
2	Female	53	26.4%
3	Age Group -20-22 years	174	86.6%
4	Age Group – 23-25 years	27	13.4%

It can be observed from the above table that female respondents formed a little more than a quarter of the sample comprising of 26.4%. The majority of the respondents were in the age group of 20-22 years (86.6%) while a small percentage of the respondents fell in the age bracket of 23-25 years (13.4%).

Analysis and results

The research instrument was first tested for its reliability using Cronbach's alpha coefficient of reliability and observed as in table 2

Table 2 : Cronbach's alpha coefficient of reliability

Determinants	No. of Items	Sample Reliability
PU	3	0.774
PEOU	3	0.703
WEBINT	4	0.791
SEC	3	0.841
BI	2	0.724

The values of Cronbach's alpha values range from 0.703 to 0.841 as observed from the Table 2. This comfortably exceeds the minimum alpha value of 0.6 (Hair et al., 1998). It is therefore concluded that the research instrument could be treated as reliable.

Factor Analysis

To ascertain the convergent validity of the scales, confirmatory factor analysis was undertaken using Principal Component Analysis (PCA) using varimax rotation. The Kaiser-Meyer-Olkin test for Sampling Adequacy indicated a figure of 0.601. The value being above 0.5, the variables meet the condition for factor analysis (Hair et al., 1998) and the same was accepted. The factor loadings were as per table 3. The Bartlett's Test of sphericity is also found to be significant. The factor loadings are presented in table 3

Table 3 : Factor Loadings

Perceived Usefulness [PU]	
Internet Banking will save time	0.789
Internet Banking will be very convenient.	0.702
Internet Banking will be very useful.	0.699
Perceived Ease of Use [PEOU]	
Internet Banking is easy to learn	0.648
It is easy for me to become skilful in operating Internet Banking.	0.616
As I am comfortable at operating the computer and the Internet, using Internet Banking will be easy.	0.594
Web Interface [WEBINT]	
Easy navigation of web site is important for Internet Banking.	0.801
Quick downloading of web pages is important for Internet Banking.	0.787
Regular updation of web site is important for Internet Banking.	0.761
Accessibility of the Bank's web site on 24 x7 basis is important for Internet Banking.	0.709
Security [SEC]	
Security is very important in Internet Banking.	0.816
Using Internet Banking would be safe.	0.791
Banks would be able to ensure security in Internet Banking.	0.615
Behavioural Intention [BI]	
Using Internet Banking would be positive.	0.783
I would like to use Internet Banking	0.723

Each of the above factors had an Eigen value of more than 1 and could explain 69.23% of the total variance.

(Nunally, 1978) has proposed a factor loading of 0.6 for construct validity. According to this table, the factor loading values except one are more than the value of 0.6. Even this case is quiet near to the value of 0.6. Hence, the items in the research instrument are able to extract underlying factors.

Correlation

The correlations among the different variables were determined as below:

Table 4 : Correlation Among Variables

		PU	PEOU	WEBINT	SEC	BI
PU	Pearson Correlation	1	.382**	.553**	.213**	.437**
	Sig. (2-tailed)		.003	.000	.002	.000
	N	201	201	201	201	201
PEOU	Pearson Correlation	.182*	1	.300**	.490**	.161*
	Sig. (2-tailed)	.008		.000	.000	.009
	N	201	201	201	201	201
WEBINT	Pearson Correlation	.654**	.300**	1	.335**	.341**
	Sig. (2-tailed)	.000	.000		.000	.004
	N	201	201	201	201	201
SEC	Pearson Correlation	.213*	.490**	.335**	1	.402**
	Sig. (2-tailed)	.005	.000	.000		.000
	N	201	201	201	201	201
BI	Pearson Correlation	.299**	.186*	0.484**	0.314**	1
	Sig. (2-tailed)	000	.007	.000	.003	
	N	201	201	201	201	201

** - 1% significance and * - 5% significance levels

The variables in the study namely Perceived Usefulness, Perceived Ease of Use, Web Interface, Security and Behavioural Intention were found to be positively correlated with each other significantly at either 1% or the 5% levels.

Regression Analysis

Regression analysis is performed on the data to study the association of the different variables with the Behavioural as the dependent variable. The results of this analysis are summarized in Table 5

Table 5 : Factors impacting Behavioral IntentionCoefficients [a]

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
Model	**B**	**Std. Error**	**Beta**		
(Constant)	1.237	.152		6.331	.000
PU	.214	.039	.287	4.130	.002
PEOU	.103	.022	.136	1.862	.089
WEBINT	.254	.046	.304	5.588	.000
SEC	.275	.047	.317	5.967	.000

a. Dependent Variable: Behavioural Intention (BI)

R^2 (Adj.) = 0.48 F = 28.67

Regression Analysis R^2 (Adj.) = 0.48 implies that it is a statistically significant model and that it is able to explain 48% of the variance in the dependent variable.

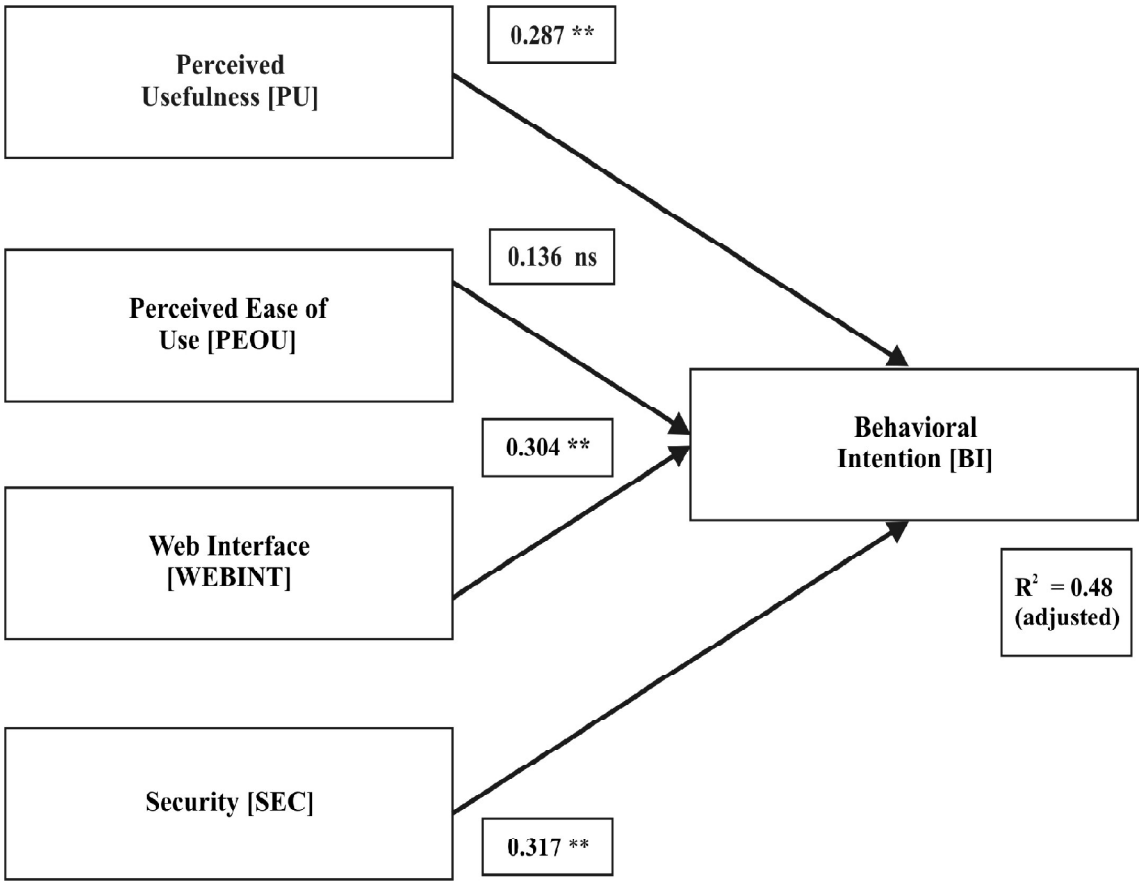
From the table it is clear that Perceived Usefulness (PU) (ß = 0.287, t=4.130, p<0.05) is significantly associated with the Behavioural Intention to use Internet Banking thereby proving Hypothesis H1. The educated youth of India perceive Internet Banking to be useful.

Perceived Ease of Use (PEOU) (ß = 0.136, t=1.862, p>0.05) is not significantly associated with the Behavioural Intention to use Internet Banking leading to the rejection of Hypothesis H2. The educated youth of India being comfortable with using computers and internet do not perceive PEOU as a major factor in their Behavioural Intention to use Internet Banking.

Web Interface (WEBINT) (ß = 0.304, t = 5.588, p <0.05) also has a significant impact on the Behavioural Intention to use Internet Banking thereby proving Hypothesis H3. The educated youth of India lay great emphasis on pleasant interaction on the web. Banks have to make their web sites very attractive for the educated youth to make them use Internet Banking.

Security (SEC) (ß = 0.317, t = 5.967, p < 0.05) has a significant impact on the Behavioural Intention to use Internet Banking thereby proving Hypothesis H4. Banks need to provide high level security measures in their Internet Banking service to attract the educated youth of India.

Based on the above regression model, the research model can be formulated as below:



ns = not significant ** - significant at 5% level

Figure 2 : Research Model for Behavioural Intention to use Internet banking

Managerial Implications and Discussion

The Management students perceived that Internet Banking would prove very convenient and time saving and therefore be very useful to them. Banks would be well advised to tap this lucrative potential market segment as it has a huge earning span of over 35 years. This segment is comfortable using computers and browsing internet and hence ease of learning to use Internet Banking service does not matter much to this segment. This makes the jobs of the Banks somewhat easier to make this segment use Internet Banking. The management students have indicated that website navigation should be pleasant for Internet Banking. Banks need to pay attention to ensure that the web pages download quickly, that it would be regularly updated and accessible on 24x7 basis. This market segment has also made it very clear that Security is an important factor to be considered while using Internet Banking. Banks are therefore advised to focus their energies on making their web sites totally secure and instill confidence in the potential users. Overall, the management students seem inclined to use Internet Banking and it is up to the Banks to provide a safe and pleasant experience to attract and retain this high potential market segment as their customers.

As Internet Banking is very cost effective for Banks vis a vis the brick and mortar branch, Banks could promote this delivery channel aggressively. Moreover, this channel is very convenient as it

can be accessed anywhere across the world on a 24/7 basis resulting in a win-win situation for the Bank and also for its customers. Banks could also think at providing newer services through this channel to further enhance the convenience level for customers leading to higher usage.

Limitations of the Study

The study has been limited to the Management students in a single metropolitan city of Chennai in India which has comparatively easier access to computer and Internet. It is opined that the results could turn out to be different had the study had been done in smaller towns and or rural areas where information related infrastructure is deficient.

Conclusion

To conclude, Internet Banking has been researched globally as a cost effective channel for Banks and its convenience for customers without any restrictions on the operational hours or geographical location. Given the cost benefits for the Bank as well as the fact that a wide range of services are now available through Internet Banking, it would be highly profitable for the Banks to target the management students who are at ease using online services since as per the results of the study, they perceive that Internet Banking would be a useful delivery channel for them.

The results of the study indicate that Banks have a very attractive and potential market segment of management students that could be tapped into for popularizing the Internet Banking – a Self Service Technology delivery channel. To ensure better utilization of the range of services offered by Internet Banking, it is essential that Banks offer a secure experience during Internet Banking operations. Also, Banks should ensure that navigating the Bank's web site should be a pleasing experience while using Internet Banking services.

Scope for future research

India has demonstrated a very high growth rate in terms of mobile phone subscribers. As per TRAI

estimates, India had a total of 904.23 million mobile subscribers as on October, 2012 with the Tele density being 74.21. As progressively more and more mobile phones become Internet enabled, Mobile Banking – another Self-Service Technology is an area which offers immense potential both for the Banks and their customers as well as for academic research.

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