
A Review of Key Factors Affecting the Adoption of Self-Service Technologies in Banking with Special Reference to Assam

Dr. Kaveri Bezbaruah*, Dr. Ajanta B Rajkonwar**

**Assistant Professor, Guwahati Commerce College, Guwahati.*

***Professor, Department of Commerce, Dibrugarh University.*

ABSTRACT:

The metamorphosis of the financial sector and the banking sector has become evident with the divergent product and services. The fusion of computers and telecommunication technologies and their advancement have changed every bank's strategy of adoption of technology. Self Service Technology is the result of such advancement. The study tries to identify the factors/variables that affect the adoption of SST services in banking in Assam. The study looks into the quantitative as well as qualitative aspects. The primary data was collected with the help of a well structured questionnaire. The main findings of the study were- The study has found that the reason behind underutilization the SSTs is primarily due to the perceived risk in the nature of – performance risk and financial risk. The adoption process, primarily in the rural area, is also affected by the factors of Technical know-how, Experience and Language skills. One of the important variable having an impact on the adoption of SSTs is the demographic variable. The people in this area of the country are drowning in information but starving for knowledge and wisdom.

INTRODUCTION:

Today, in the world of banking, 'ideate, innovate and inspire' seems to be the survival strategy. There has been a replacement of the labour-intensive procedures with automated procedures. Banking happens to be an industry with highest information handling content. The banking sector have come a long way and the mechanisation of this sector has added fuel to the entire process of transformation of the industry, which now aspires to serve the world at large instead of confining itself to a particular sector or area.

Technology has successfully added a new dimension to the banking industry. At a time, when banking can be done from anywhere and at anytime, customers are no longer confined to the branches but have become customer of the bank.

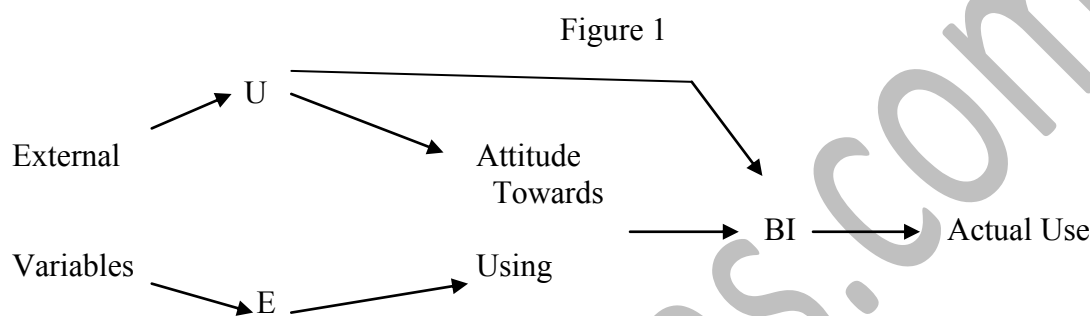
As a consequence of advancement in Information Technology, the banks have initiated the Self Service Technology to do away with the expensive physical branch. SSTs are defined as technological interfaces that aid users generate service without direct involvement from the service company employee. (Meuter, 2000).

Automatic Teller Machine, Interactive voice response systems, Vending machines, Automated check-in for flights, Internet based services, etc are examples of technology based service delivery systems, which are known as Self Service Technologies (SSTs). Banks have also adopted SST through the provision of ATM, Internet Banking, Mobile banking, etc.

As a result the customers are confronting a myriad of options to use the banking services. The entire banking industry in India in order to portray them as technosavvy and to have a point of parity is offering their services through every available technology enabled mediums.

CONCEPTUAL FRAMEWORK

Various studies have developed various models to show the factors affecting the adoption of a new technology which were named as Technology Acceptance Model. One such model that can be applied to the banking sector to study the acceptance of a technology enabled product/delivery channel is one developed by Davis, Bagozzi and Warshaw (1989) which is illustrated below-



Here the term 'U' has been used to denote 'Perceived Usefulness'; 'E' stands to denote 'Perceived Ease to Use' and 'BI' means 'Behavioural Intention to use'.

External variables includes factors such as demographics, personal traits and technology attributes which acts as mediators of variables of perceived usefulness and ease of use, thereby creating an attitude and intention to use a particular technology and finally using.

The interaction between demographics (that is, age, gender, occupation etc) and personal traits (that is, technology anxiety, technological innovativeness) have their own effects on the intentions to use SST.

It is important to remember that various studies have highlighted the fact that a human's, be it the bank employee or the customer, perception and usage of service delivery technology is numerous factors such as, perceived ease of use, perceived usefulness, perceived risk, purpose, comparative benefits, technological reliability, advantages offered, etc.

Among the various factors, the factor of risk plays a dominant role. Perceived risk can be defined as uncertainty regarding possible negative consequence of using a product or service. The banks need to know the psychology of the customers for better innovations and business. The study has also given emphasis on these theories for a better understanding of the responses of the account holders.

Featherman and Pavlov (2003) have given a detailed description and definition of perceived risk facets which a person experiences while adopting e-services-

Table 1 Perceived Risk Facet

Perceived Risk Facet	Description
Performance risk	The possibility of the product not performing as it was designed and advertised
Financial risk	The probable monetary outlay associated with the initial purchase price and the subsequent maintenance cost.
Time risk	The time lost by the customers while making a bad purchasing decision only to replace it if it does not perform to expectations
Psychological risk	Potential loss of self –esteem (ego-loss) from the frustration of not achieving a buying goal
Social risk	Potential loss of status in one's social group as a result of adopting a product or service, looking foolish or untrendy
Privacy risk	The extreme case where a person's identity was used without his knowledge or permission.

Source: Featherman and Pavlou (2003)

The choice of a particular channel of electronic banking depends on a number of factors. A tabular description of these factors, which can also be termed as Hierarchy of decision criteria-

Table 2 Factors affecting the choice of channel of electronic banking

Criteria	
Purpose	Fund Transaction
	Availing Information
	Service Requests
Perceived Risk	Performance Risk
	Security Risk
	Financial Risk
	Time Risk
	Psychological Risk
	Social Risk
Benefits	Time Saved
	Money Saved
	Less Physical efforts
	Round the clock banking
Requirements	Technical know-how
	Equipments
	Experience
	Language skills

Source: Natarajan, Senthil and Manickavasagam (2010)

The study tries to identify the factors/variables that affect the adoption of SST services in banking. Intensifying the knowledge about these variables, which facilitate or hinder the adoption process, will positively affect the adoption rate of these services. In order to achieve the desired objectives, the study was based the models suggested by Davis, Bagozzi and Warshaw (1989), Featherman and Pavlov (2003) model relating to perceived risk facets which a person experiences while adopting e-services and model relating to factors affecting the adoption of channel of electronic banking Natarajan, Senthil and Manickavasagam (2010)

OBJECTIVES:

1. The study tries to analyse as to how, when and where customers prefer to use the SSTs in banking.
2. Secondly, do the users feel more convenient by using new technology (SSTs) for their banking?.
3. To know what factors can be measured for pattern of adoption of SST?

METHODOLOGY:

The area selected for collection of data for the study is Kamrup district of Assam, covering both Kamrup district (Rural) and Kamrup district (Metro). The Kamrup district was selected by purposive method as it covers not only the capital of Assam, Dispur, but also the largest city, Guwahati. Moreover the pilot survey revealed that all the leading commercial banks of the country, both private and public sector, have their branches in the Kamrup district with the latest technology. Kamrup (metro) is the place where we can see the conglomeration of people from all parts of Assam.

Kamrup (Metro) is the hub of people of different backgrounds, religion, culture, etc. although the respondents culture, religion, language, etc has not been considered separately in the study, the respondents are by and large from different communities. Therefore, their response though collected from Kamrup district only does not really impair the study much merely for the reason of this sampling bias.

The study looks into the quantitative as well as qualitative aspects of the banking sector. The primary data was collected with the help of a well structured questionnaire. For designing an effective questionnaire for the study, the validity of the questionnaire was tested.

As the population (bank customers) became infinite and the complete census of the population of the Kamrup district is not possible, a large sample size (1293) has been taken so that the chances of error is less and so that they become more representative, as per the rules of Statistics.

The sources of secondary data for the study was collected from reputed journals, magazines, related books, websites ,bank record and literatures, various libraries, research findings of universities, reports, manuals, bulletins, etc.

Using Statistical Package for Social Sciences (SPSS) 13.0 for Windows analysis was made and the tools such as chi square, weighted average, chart, percentage, etc have been used for the study.

DEMOGRAPHIC FACTOR ANALYSIS

The demographic factor analysis of the data collected has been done in the succeeding Table 3 Through the Table it is clear that majority of the customers come under the age limit of 25 years to 55 years. Male respondents are more than female respondents. Customers are more from the urban areas than the rural areas.

Table 3 Demographic Factor Analysis

Factor	Category	Frequency	Valid %	Cumulative %
Age	18- 25	120	9.3	9.3
	25-40	490	37.9	47.2
	41-55	372	28.8	75.9
	56-60	191	14.8	90.7
	61-90	120	9.3	100.0
Gender	Male	776	60.0	60.0
	Female	517	40.0	100.0
Geographical Location	Urban	911	70.5	70.5
	Rural	382	29.5	100.0
Occupation	Service	579	44.8	44.8
	Business	374	28.9	73.7
	Students	120	9.3	83.0
		100	7.7	90.7
	Housewives	120	9.3	100
	Retired			

DATA ANALYSIS

Physical Visit to Branch

A vital aspect that has to be taken into cognizance of is that technological development have brought banking to our finger tips and which is saving time, effort and cost. But it seems, this part of the country (Assam in particular) has a long way to go before domestic customers start using technology for day –to-day transactions. We can still find long queues at the counters specially cash counters of the so called “e-banks”.

The following Table shows the frequency of visit of the customers to a bank in a month.

Table – 4 Physical Visit to a bank branch

Area	Physical visit to the bank in a month			Total
	Zero	1-3 times	4-7 times	
Urban	622	277	12	911
Rural	54	297	28	379
Total	676	574	40	1290

Source: Compiled from questionnaire

It has been found that even in the urban areas people visit a bank branch to deposit money while they use the ATM to withdraw the money. The ratio of the people visiting a branch 1-3 times to that of the persons not visiting is as follows in the two areas-

URBAN = 277: 622 or 0.445

RURAL = 297: 54 or 5.13

The customers visiting the banks in the rural areas are much higher as compared to the urban counter parts. Customers regularly visit the bank as a part of their social interaction, besides monetary matters. The banks are in the path of becoming virtual and efforts are on to create a cashless society but the habits in the rural areas are acting as a stumbling block. People still visit the bank branch for numerous reasons when such facilities are available online.

ATM

ATMs are used mostly for money withdrawal and balance enquiry. 90% of the respondents are oblivious of the fact that whether any other business can be done through the ATM. Moreover majority of the ATMs installed in the Kamrup District cannot execute any other function other than dispensing cash and printing mini statement.

Table 5 Usage of ATM

Age (in years)	Usage of ATM			Total
	Frequently	Occasionally	Never	
18- 25	22	88	8	118
26-40	106	157	40	303
41-55	106	131	56	293
56-60	53	68	14	135
61-90	15	34	33	82
Total	302	478	151	931

The consumers in the age group of 26-40 years are the most frequent users of the ATM. 34.98 % of them use the ATM frequently.

While the people in the age group of 41-55 years, 36.18% of them use the ATM frequently, 44.71% of them use it occasionally.

But if we move up in the age ladder we find that 41.46 %of them use the ATM occasionally while 40.24% of them have never used it. This is because they never felt the need of it. If they need any cash 90% of them either withdraw it by visiting the bank or ask any of their siblings to withdraw it for them. Some of the retired customers do not have the ATM card and those who have one, have never used it. Some of them have used the ATM card only for the purpose of shopping.

• On the basis of Area

Table 6 Usage of ATM

Area	Usage of ATM			Total
	Frequently	Occasionally	Never	
Urban	297	396	56	749
Rural	5	82	95	182
Total	302	478	151	931

Source: Compiled from questionnaire

Of the total respondents (that is, 1293), only 931 of them use the ATM for some purpose. If we say in other words 28% (that is 362) are non users and most of them are from the rural areas.

When the chi-square test at 5% level of significance was done it found that the calculated value of chi-square (238.78) is greater than the table value (5.991) which proves that usage of ATM is related to the area of residence of the customer. The people in the urban areas are using the ATM more comparably to the rural areas

The non usage of the ATM in the rural areas is mainly because there are only eight ATMs in the rural Kamrup. Most of them remain non functional for long period of time due to various reasons during the year. So the people do not rely on the ATM.

Personal traits and perceived risk acts as hindrance for the rural customers in using an ATM.

MOBILE BANKING

Mobile banking has emerged as noble way of offering banking service to the people. Mobile phones have proliferated into the nook and corner of the country. So it has emerged as the most potential medium for banking as it can overcome all barriers to entry in the traditional banking system. Technology in mobile phones has been improving at tremendous speed over the last decade. Many sophisticated services including financial services have been added to the 3rd G mobile phones. Today's mobile phones can store money as information in the SIM card or in an internal or external memory card and can be used as a device to transfer monetary value from person to person in the real and the virtual world (Hamdi 2011)

As there has been a nationwide campaign of 'Accelerating Financial Inclusion through Mobile Phone Technology', in the Kamrup district there are no takers of mobile banking in the rural areas

Table – 7 Usage of Mobile Banking

Area	Usage of Mobile Banking			Total
	Frequently	Occasionally	Never	
Urban	21	96	434	551
Rural	0	0	73	73
Total	21	96	507	624

Very few people in the rural areas answered the query as they are ignorant about the fact that banking can be done through the mobile. 94% of the respondents in the rural had a mobile handset but majority of them were oblivious of the fact of mobile banking.

- **On the basis of Occupation**

Among the few takers of mobile banking, the 'service holders' category ranks the highest. There are not only occasional users but also frequent users of mobile banking. This facility requires special software to be downloaded in the handset. But as we move from the service class to the business class, to the students, housewives and retired persons, the use of mobile

banking shows a downward trend. The students do not feel the necessity of mobile banking and are satisfied with the ATM and the use of ATM card as debit card.

Table – 8 Usage of Mobile Banking

Occupation	Usage of Mobile Banking			Total
	Frequently	Occasionally	Never	
Service	16	47	126	189
Business	5	42	150	197
Students	0	0	118	118
House wives	0	5	36	41
Retired	0	2	77	79
Total	21	96	507	624

All these respondents who have given a positive answer are confined to the urban takers. The previous Table 7 has shown that there no takers in the rural areas.

• **On the basis of Age**

Mobile seems have caught the fancy of the young generations. Mobile phones have emerged as the miniature version of computer enabling a person to perform many tasks.

Banking is one such function. So a age wise analysis of mobile banking have been done

Table – 9 Usage of Mobile Banking

Age	Usage of Mobile Banking			Total
	Frequently	Occasionally	Never	
18- 25	0	0	118	118
26-40	11	50	141	202
41-55	10	34	134	178
56-60	0	10	37	47
61-90	0	2	77	79
Total	21	96	507	624

Mobile banking in the Kamrup district has attracted the customers in the age group of 26 years to 55 years. The people below the age of 26 years and those above 56 years are not fond of mobile banking. They find the ATM and the card facility convenient enough for their monetary transactions. Mobile connectivity is still a problem in certain areas in the district.

ONLINE BANKING

In India, the banks have claimed that Internet banking has grown rapidly, but there is not enough evidence of its acceptance amongst consumers

.It has been found that consumer's attitudes toward online banking are influenced by the prior experience of computer and new technology (Laforet and Li.2005) . The adoption of electronic banking forces consumers to consider concerns about password integrity, privacy, data encryption, hacking, and the protection of personal information (Benamati and Serva, 2007)

- **On the basis of Age**

Table – 10 Usage of Online banking

Age	Usage of Online banking		Total
	Occasionally	Never	
18-25	0	118	118
26-40	86	85	171
41-55	40	143	183
56-60	9	35	44
61-90	5	75	80
Total	100	496	596

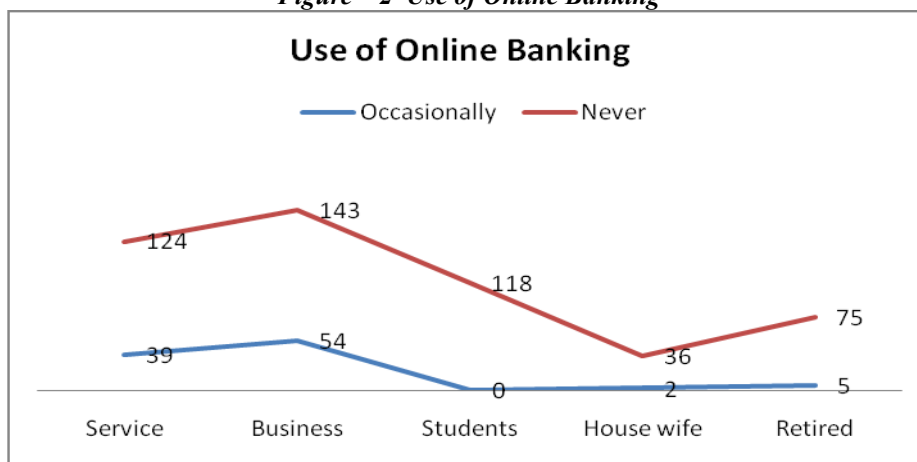
There are three parameters (frequently, occasionally and never) used to measure the use of any electronic product in the study. As revealed by the above Table there is no frequent user of Online banking. Online banking has not touched the under 25 population. They are of the opinion that they have nothing to transact online. Their needs are sufficed by the ATM and the ATM card. It shows a downward trend as we go up the age ladder. The customers' perception is affected by the 'Privacy' factor. People in the higher end of the age ladder is also affected by the factors such as Security, Privacy, Trust and Familiarity in using the online banking

Most of the respondents use the online facility to book air tickets, railway reservations and hotel booking. Online shopping is done mostly with 'cash on delivery' option than online payment. The confidence is shaky with online banking because of the fear of cyber crime.

- **On the basis of Occupation**

People in different occupation have to deal with monetary transaction

Figure – 2 Use of Online Banking



The Line diagram (Figure 2) above gives a clear picture of the data. There are no frequent users of the online banking. Most of them are occasional users. Among the occasional users, the businessmen category scores the highest. These include the travel agency business, star category hotel business, etc. The people who have never used the online banking facility are far higher than the occasional user. The red line represents the non-user while the blue line denotes the occasional user. But all the categories of the respondents belong to the urban Kamrup.

The analysis of online banking was not done on the basis of area of residence as the rural population has not reaped the benefit of online banking. Most of the rural areas in rural Kamrup face the problem of connectivity and electricity which makes online banking very difficult. The business community is mostly on the monetary system with the calculator being the sole technological product used.

FINDINGS AND SUGGESTIONS

Carrying cash can be risky but cash still remains the most preferred mode of payment for the customers. The people need to be educated as well motivated to adopt cashless systems. The Kamrup district, although it rates the highest in literacy, but there are marked differences between the urban and rural areas in the field of financial literacy and there is also a perceptible variation in the penetration of banking in the region. Banks should change its governance from WHAT IS PRESCRIBED TO WHAT IS APPROPRIATE.

We can see that there is huge disparity in the adoption and perception between the bank customers of the rural and the urban area.

The study has found that the reason behind underutilization of SSTs is primarily due to the perceived risk in the nature of – performance risk and financial risk.

The adoption process, primarily in the rural area, is also affected by the factors of Technical know-how, Experience and Language skills. As such the number of biometric machines should be increased. The forms, interactive websites etc should be in the local language.

As we approach closer to the Guwahati city the knowledge and awareness regarding the modern facilities increases

The products have not gained popularity as they are tailor made

The banks have a long way to go to bridge these differences in the field of knowledge, adaptability, usage, etc.

Bank customers still rely on the traditional channels to carry out their banking operations. This is largely due to the fear of losing their money through electronic banking. There are still a large group of customers who refuse to adopt the services. Participants don't like to use SSTs in banking because it involves Money.

One of the important variable having an impact on the adoption of SSTs is the demographic variable. Customers are affected by their families and friends, age, place of residence, etc when they adopt any SST. Also Perceived ease to use, that is, knowledge in how to operate any machine or service is important for customers.

Public relations 'move minds', while advertisement 'moves product'. So the banks should lay stress more on public relation policies than on advertisement as public relation helps in 'seeding an idea in the mind', while advertisement helps only 'selling'.

CONCLUSION

These simple banks have now become global industrial powerhouses that have through the medium of technology created ever more complex products that use risk and securitization in models that enable people to avail banking services 24 hours a day and 365 days a year through ATMs and at online banking. In the electronically enabled exchanges, everything from stocks to currency future contracts can be traded.

The study has also revealed that in the region of Kamrup, which also holds true for the rest of the state, there is a significant presence of micro activities through which majority of the people earn their livelihood. The imbalance of banking service between the Kamrup (Metro) and Kamrup (rural) is because of infrastructural bottlenecks, power shortage and commercial non viability which leads to huge investment on the part of the bank. The study has identified several factors that seem to influence the satisfaction and usage of the SSTs in this part of the country. It is always very important for the banks to map the battlefield, choose the proper strategy, concentrate, refine and be patient in this part of the country.

The people in this area of the country are drowning in information but starving for knowledge and wisdom.

REFERENCES

- i. Benamati and Serva (2007). Trust and Distrust in Online Banking: Their Role in Developing Countries. Information Technology for Development. Vol.13. No.2. pp 161-175. Taylor and Francis. London.
- ii. Davis, F., Bagozzi, R., and Warshaw, P. (1989) User Acceptance of Computer Technology: A comparison of Two Theoretical models. Management Science, 35(8). Pg 982 -1003.

- iii. Featherman, M.S., Pavlou. P.A. (2003). Predicting e-servicers adoption: a perceived risk facets perspective. *International Journal of Human Computer Studies*. Vol. 59. Pg 451-474. Elsevier Ltd.
- iv. Hamdi, Helmi (2011). Can E-Payment Systems Revolutionize Finance of the Less Developed Countries? The Case of Mobile Payment Technology. *International Journal of Economics and Financial Issues* Vol. 1, No. 2, 2011, pp.46-53. (Retrieved from www.econjournals.com on September 2012)
- v. Haque Ahasanul (2009). Issues of E-Banking Transaction: An Empirical Investigation on Malaysian Customers Perception. *Journal of applied Sciences*. (Retrieved from www.ebsco.com on 20th September 2010.)
- vi. Kumar, Soundara.(2004). Retail banking- A Strategy for the Future. (Retrieved from www.iba.org.in/...Mrs Soundara Kumar.ppt on December 2015.
- vii. Laforet, S. and Li, X (2005). Consumers attitudes towards online and mobile banking in China. *International Journal of Bank Marketing*. Vol.23 No.5:pp 362-380. Emerald Group of Publishing. UK.
- viii. Meuter, M.L., Amy, L. Ostram., Robert, I. Roundtree and Mary Jo Bitner (2000). Self service technologies: Understanding customer satisfaction with technology based service encounters. *Journal of Marketing*. Vol 64 no. 3 pp 50-64. American Marketing Association.
- ix. Natarajan, Thamaraiselvan, Senthil. Arasu Balasubramaniam, Sivagnanasundaram, Manickavasagam, (2010). Customer's Choice amongst Self service Technology (SST) Channels in Retail banking: A study Using Analytical Hierarchy Process (AHP). *Journal of Internet Banking and Commerce* . Vol 15, no.2. Pg 1-16.
- x. Seranmadevi, R. And M.G. Saravanaraj (2012). Technology @Banking Services. *European Journal of Social Sciences*. Pp 472-488.
- Uppal, R.K. (2006). *Indian Banking Industry and Information Technology*. New Century Publications. New Delhi.
- xi. Uppal, R.K. (ed.) (2008). *Banking Services and Information Technology – The Indian Experience*. New Century Publications. New Delhi.
- xii. Uppal R. K., and Rachana Kumari (2009). *Indian Banking Vision-2020*. Sarup Book Publishers Pvt. Ltd. New Delhi.