

**AN ANALYTICAL STUDY OF TECHNOLOGY INNOVATION IN BANKING SECTOR AND ITS IMPACT ON BANKING SERVICES WITH SPECIAL REFERENCE TO ORIENTAL BANK OF COMMERCE IN NAGPUR CITY FOR THE PERIOD OF 2009-2019**

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***Abstract***

Nowadays banks have moved from disbursed to a centralised environment, which shows the impact of information technology on banks. Banks are using tools and techniques to find out their customers need and offer them tailor made product and services. The competitive pressures and the changing requirements of the consumers have forced the banks to go in for adoption of new technologies. Strong banking system is a prerequisite for a healthy and prosperous economy. The most significant change in the banking technology is taking place today in the banks throughout the nation. Banks are making efforts to persuade customers to use their services by offering innovative products and services. The more services the customer uses greater would be the banks' profits. The use of technology has led to a win-win situation for Banks and their customers. The organizations that were quick to adopt technology are reaping rich dividends because they managed to cut costs and streamline their operations. Technology has also enhanced customer satisfaction. With a few clicks of the mouse you can transfer the money from one bank account to another bank account anywhere in the country. Internet technology is rapidly changing the way personal financial services are designed and delivered.

**Keywords:** Oriental Bank, Technology, Innovation, Banking

**Introduction**

In recent years' technological development has dramatically changed the banking scenario in terms of offered services to their stakeholders. E-commerce now a day plays a pivotal role in today's trading activities. Now any banking transaction can be settled in clicks. Every banks have their own distribution networks with transactional different avenues and websites, which allow customers to access many different facilities like opening of accounts, applying for loan, checking balance, transferring funds, and making and receiving payments over the internet etc. Automated banking has gained worldwide acceptance as a new delivery channel for performing various banking transactions (Ayrga and Doomun, 2010)<sup>1</sup>. Modern technology has bridged the gaps in terms of the reach and the coverage of systems and enabled better decision making based on latest and accurate information, reduce cost and overall improvement in efficiency (Uppal R. K., 2011)<sup>2</sup>. Online financial services offer consumers a set of information related benefits that favours adoption, including the opportunities for the user to control bank account at any time and place, and access to personalized information content for making investment and financing decisions (Manzano J.A., Navaree L. C., and Blas S.S. and Mafe R.C., 2009)<sup>3</sup>. Technology has brought about a complete paradigm shift in the functioning of

the banks and delivery of banking services. Gone are the days when every banking transaction required a visit to the bank branch. The growth of the internet, mobiles and communication technology has added a different dimension to banking (Sambamurthy B. and Parekh A. 2010)<sup>5</sup>. In recent time, Indian banking industry has been consistently working towards the development of technological changes and its usage in the banking operations for the improvement of their efficiency. “To get the benefits of enhanced technologies, Indian banks are continuously encouraging the investment in information technology (IT), i.e. ATMs, ebanking or net banking, mobile and tele-banking, CRM, computerization in the banks, increasing use of plastic money, establishment of call centres, etc. RBI has also adopted IT in endorsing the payment system’s functionality and modernization on an ongoing basis by the development of Electronic Clearing Services (ECS), Electronic Funds Transfer (EFT), Indian Financial Network (INFINET), Real-Time Gross Settlement (RTGS) System, Centralized Funds Management System (CFMS), Negotiated Dealing System (NDS), Electronic Payment Systems with the ‘Vision Document’, the Structured Financial Messaging System (SFMS) and India Card – a domestic card initiative, implemented recently” (Rajput N. and Gupta M., 2011)<sup>6</sup>. In the era of information technology- banking has become one of the most revolutionized components of today’s economic growth. With the proliferation of internet and computer usage, e-banking has become ideal for banks to meet customer’s expectations. Nowadays banks are working hard to attract customers and retain their market share by providing them with various innovative services through e-banking (Devi Ambiga P. and Malarvizhi V. 2010)<sup>7</sup>. Information technology has brought key changes in the banking operations. Foreign and Private foreign sector banks were the leaders in adopting the new the technology to align their business processes technology deployment is slow in Public sector banks because of this reason. The main focus of the banks till now was on the deploying the technology (Mittal, R.K. and Dhingra, S., 2007)<sup>9</sup>.

Banks utilized computerbased systems as well as telecommunication technologies for storage, processing and communication (Adetayo J.O., Sanni S.A. and Ilori M. O., 1999)<sup>10</sup>, computer technology has provoked several inventions and automated devices. Information technology now allows banks to get closer to their customers, find out what they really want, and deliver a wider range of services at lower cost (Gate B., 1996)<sup>11</sup>. Information technology has resulted in a major attitudinal change by revolutionizing the treatment of customers of the banks. In spite of geographical distances, the customer can be treated as a customer of the bank and not as a customer of the branch. This is only possible due to usage of IT on a large scale where database are possible in a bank with decentralized access. Banks need to constantly look for innovative services which offer the convenience of transacting from anywhere and at any time by using suitable delivery channels for them (Dawood Musba). Information technology is the frontier which would add value to the services of which increases the customer base- a strong foundation to the super structure Managing customers is one of the main issues faced by banks. The demands and expectations of the customers grow at a much faster rate than the banks can equip themselves to be with them. If the service levels or the product levels are not up to the customer satisfaction, there is always a danger that the customer might shift his transactions elsewhere. In banking, as the products can be copied very fast, it is the customer service levels that really matter. The latest techno- savvy products coupled with excellent customer relationship will increase the level of customer satisfaction.

### **Literature Review**

The review of the related literature including aspects of similar studies. This chapter is designed to analyse the review of the past work done in this field to know the research gap and analysis made. Today, we cannot think about the success of a banking system without information technology and communication. It has enlarged the role of banking sector in the economy. The financial transactions and payment can now be processed quickly and easily. The banks with the latest technology and techniques are more successful in the competitive financial market. They have been able to generate

more and more business resulting in their greater profitability. Various empirical and theoretical studies have been undertaken at the national and international level to analyze the impact of e-banking and information and communication technology (ICT) on banking sector, customers, service quality and payment system. The studies mainly focus upon e-banking impact on productivity and profitability primarily due to core banking system, electronic fund transfer, real time gross settlement system and electronic clearing services. From the customer angle the studies primarily focus upon; why customers choose e-banking products and increase in their level of satisfaction due to phone banking, mobile banking, internet banking, website services, ATMs, etc. These services have not only improved the satisfaction level of customers, but also helped in reduction of processing time and transaction time. The productivity of banks in terms of time saving and attending the customers at the branches has also improved. The review of following studies throws light upon different aspects of e-banking. To know the impact of e-banking on various aspects, the research studies undertaken for the review have been classified into four categories, i.e., studies related to banks, studies related to customers, studies related to service quality and studies related to technology. After liberalization, globalization and privatization, Indian banking system has become quite complicated and varied. Banks have evolved into a technology for delivering a wide range of financial services. IT has become responsible to bring a paradigm shift in performance of the banks. The perceptions and expectations of the customers and employees are continuously changing. The available related literature was studied which proved to be very useful in getting an insight into the main sub areas of this study. The summary of literature review is mentioned in the following table

Sr. No.	Review Parameter	No. of reviews
1	Reviews Related to Banks	9
2	Reviews Related to Customers	3
3	Reviews Related to Service Quality & SERVQUAL Dimensions	9
4	Reviews Related to Technology	6
5	Reviews related to Security Framework in Mobile Banking	3
6	Reviews Related to Customer Satisfaction	3
7	Reviews Related to Online Banking	5
8	Reviews Related to Consumer Adoption of Self-Service Technologies (SST)	10
9	Reviews Related to Consumer Behaviour Towards Self-Service Technology (SST)	6
10	Others Reviews Related to Study	8

A review of the literature on the subject indicates that the introduction of IT, Liberalisation and globalization is very vital for the present banking system. A comprehensive review of the literature reveals, in the era of Liberalisation and globalization, a paradigm shift is taking place in ownership, co-operate governance, business, IT and performance of various bank groups. There is a paradigm shift in the performance. Hence, there is a need to examine the impact of information technology on the performance of bank on one hand and on the other hand, it is equally important to assess the satisfaction levels of the customers in the banks, and that of the bank employees. Therefore, this study is concerned with mainly with the impact of technology on banking operations, the performance of

OBC bank in self-service banking technologies, the perceptions of customers with respect to these services of banking.

## Research Methodology

The research methodology, research design, problem statement, research questions, objectives and hypothesis. The present research will be unique study and is likely to bring fruitful results in terms of information connected with automated banking services. In these days of highly competitive world and globalization the automated banking services are getting recognition day by day. Self-service banking technologies (SSBT) has made the banking services available to their irrespective of the location where he/she is. The biggest issue is that how the customer is responding to these automated services. What is difference in the perception of the people, who are banking OBC bank? Research will assess the constraints about the effectiveness of customercentric Self-service banking technologies (SSBT) in OBC bank, and try to suggest the required strategies. It is also hoped that the present research work will motivate further researches in this field and will contribute to Indian society as a whole. The study would be both Exploratory and Descriptive. The objective of exploratory research is to gather preliminary information that will help define problems and suggest hypothesis. The objective of descriptive research is to describe things, such as the market potential for adoption of Self service banking technologies (SSBT) by consumers or the demographic and attitudes of consumers who are using Self-service banking technologies (SSBT). The study has attempted to identify the factors that enable the use of customer centric Self-service banking technologies (SSBT). At the same time, it also attempts to examine the various problems which the customers faces and their satisfaction level while banking through Self-service banking technologies (SSBT).

## Objectives of the Study

1. To analyse the effect of demographic factors on the adoption levels of Self Service Technologies by bank customers.
2. To develop a framework to understand the influence of customer behaviour variables on the usage of self-service technologies.
3. To uncover the relationships among the beliefs, attitudes and the usage intentions about them, and relate them to the usage of Self-Service Banking Technologies.
4. To examine the awareness level of self-service technologies among the customers of nationalized banks.
5. To find the satisfaction level and quality perception of bank customers who are using these services.
6. To examine the factors that assists and hampers the adoption of these services.
7. To find out the challenges faced by the banking customers in practicing these self-service technologies.

## Hypothesis

The Major hypotheses framed for this study are as below

H01: The adoption levels of the Self-Services Technologies (SST) by bank customers do not vary significantly with the variation in their demographic factors such as gender (H1a0), age (H1b0), income (H1c0) and occupation (H1d0).

H02: The adoption levels of Self-Services Technologies (SST) by bank customers do not vary with the place of residence.

H03: There is no significant difference between the users and non-users of Self Services Technologies (SST) and branch visit frequency.

H04: There is no significant difference between the users and non-users of Self Services Technologies (SST) and hours of computer usage per day.

H05: There is no significant difference between the users and non-users of Self Services Technologies (SST) and hours of internet browsing per day

**Data Analysis and Interpretation**

The data analysis and interpretation. This chapter is divided into four parts: Part A presents the demographic profile of the respondents and findings pertaining to overall aspects regarding the banks. Part B explains the usage patterns of respondents, which includes their computer and internet usage, awareness levels about electronic banking services, frequency and duration of using Self-Service technologies. It also represents the usage pattern of individual Self-Service technologies like ATM, Internet banking, Telephone banking, Mobile banking and Mobile wallet. Part C discusses the adoption level measurements, the effect of demographic factors on the adoption levels and examines the perceptual and attitudinal determinants of adoption levels.

Demographic Factors	Valid Items	Frequency	Percentage
<b>Gender</b>	Males	514	68.2%
	Females	240	31.8%
<b>Age</b>	18-27	292	38.7%
	28-37	164	21.8%
	38-47	120	15.9%
	48-57	82	10.9%
	Above 57	96	12.7%
<b>Educational Qualification</b>	Not formally Educated	122	16.2%
	High School	94	12.5%
	U.G Degree	56	7.4%
	Master’s Degree	286	37.9%
	Others	196	26.0%

Part D deals with the satisfaction level of the users of different Self-Service technologies, the relationship between customer satisfaction and service quality of the individual’s Self-Service technologies options and its influence on adoption levels. This part of the analysis presents the demographic profile of the respondents, their Self-Service Banking Technology usage and their perception pertaining to overall functions of the bank. A total of 754 questionnaires were distributed in the study area as it covers the Urban, Semi-urban and rural banked centers. All the 754 questionnaires were received back yielding a response rate of 100 percent since the data collection was done using direct contact method. On further examination of these 754 respondents, it is found that 54 respondents are presently not using any of the Self- Services because of minor problems like card lost/damage, Password error, and so on. As soon as the problem gets rectified they will again continue their usage so including them would not affect the research output since they are the users of any of the self-Service banking Technology. Of the respondents 54.1 percent were married, 40.6 percent were unmarried and 5.3 percent were divorced. While discussing the educational qualification

of the respondents 37.9 percent has Master degree, 7.4 percent have under graduate degree, and percent said they are not formally educated, 12.5 percent said they have finished high school and 26 percent fall under others category. Here the other qualification occupies the second highest position that includes Diploma courses, ITI, M.Phil., Ph.D. and so on. So this clearly shows that it is the educated category of the population who has widely adopted the electronic banking channels. This is in tune with similar studies done earlier. The studies by Karjaluoto et al. (2001) and Joshuva (2009) also have shown that it is the educated category of the bank consumers who are likely to use more of technology- enabled banking self-services. Among the occupational categories, the student category has the highest number among the respondents with 38.7 percent, followed by the salaried category with 25.2 (14.3 + 10.9) percent.

<b>Occupation</b>	Govt. Employee	108	14.3%
	Private Employee	82	10.9%
	Business	68	9.0%
	Self Employed	80	10.6%
	Student	292	38.7%
	Others	124	16.4%
<b>Marital Status</b>	Married	408	54.1%
	Unmarried	306	40.6%
	Widowed	40	5.3%
	Divorced	0	0%
<b>Total number of respondents</b>		<b>754</b>	<b>100%</b>

H#	Hypothesis	Conclusion
1	H1a. The adoption levels of the Self-Service Technologies by bank customers vary significantly with the variation in the gender.	Rejected
	H1b. The adoption levels of the Self-Service Technologies by bank customers vary significantly with the variation in their age.	Failed To reject
	H1c. The adoption levels of the Self-Service Technologies by bank customers vary significantly with the variation in their type of occupation.	Failed To reject
	H1d. the adoption levels of the Self-Service Technologies by bank customers vary significantly with the variation in their income level	Failed To reject
2	H2. the adoption levels of the Self-Service Technologies by bank customers vary significantly with the variation in their place of residence	Rejected
3	H3. There is a relationship between the various dimensions of Self-service Technologies Adoption	Failed To reject



## Findings, Suggestions and Conclusion

Some of the major findings are Out of 754 respondents, majority (68.2 percent) of the respondents are male. Out of 754 respondents, greater part (31.8 percent) of the respondents belongs to the category of 18-27 years old. In the educational qualification of the respondents, major (37.9 percent) parts of them have done their Master degree. The maximum (38.7 percent) of the respondents belongs to the student group with various professional degrees. Majority (54.1 percent) of the respondents are married. Majority (62.3 percent) of respondents' income lies between no income or up to Rs. 15000 categories. The maximum (50.1) of the respondents are from the semi-urban part of the district followed by second maximum (27.9) were from the rural part. When asked about the frequency of visit to a prime bank, the maximum (46.9 percent) of the respondents have selected monthly once as their preference. Next maximum (23.6 percent) of the respondents visits very rarely. It is found that majority (68.2 percent) of the respondents visiting branch on a monthly (45.5 percent) basis are males whereas female respondents (31.8 percent) visiting branch on a monthly basis is 50 percent. Majority (73.2 percent) of the respondents have more than one bank account either in the same bank or in another bank. Vast majority (92.8 percent) of the respondents is having savings bank account and this might be because of various financial inclusion programmes made by the government and banks. Of the total respondents, 92.9 percent of the respondents are using ATM and this proves that a vast majority of the respondents have adopted ATM as their major Self-service Technology delivery channel and also shows the strong penetration of ATM in the past few years. Of the respondents 69.2 percent have stated that they have access to computers and 62 percent have responded that they have access to internet. The majority of the respondents (65.8 percent) are regular users of computer as evident from the computer usage pattern which shows that the largest percentage (30.8 percent) of respondents use computer for one to three hours per day. 18.3 percent of the respondents use computers for one hour or less and 9.3 percent of the respondents use the computers for 3 to 6 hours per day. The results showed that majority (62 percent) of the respondents browse internet on a daily basis for one to 6 hours and the rest hardly use. Awareness levels about ATM are found to be 100 percent because of its penetration and growth in recent years whereas for Internet banking it is found to be 60.5 percent. In case of telephone banking and mobile banking it was 32.6 percent and 67.4 percent respectively. It is 16.7 percent for Mobile wallet and this awareness level is found very minimum because many of the banks do not provide this service. Awareness levels among non-users of these services are still lower at 29.4 percent, 18.8 percent, 28.6 percent and 6.3 percent respectively for Internet banking, telephone banking, mobile banking and mobile wallet services. It is found that ATM is the most frequently used Self-Service Technology channel with 72.3 percent of respondents using it at least once or twice a week.

## Managerial Implications and Suggestions

The banks have to locate their bank branches and ATM centers conveniently to target their customers and see to it that it is staffed with subservient employees and maintain great service standards. This is because, as seen from the results, the bank branches are still relevant in the Indian context and the result shows that important bank choice criteria are convenience of location, wide spread of ATMs, better service and friendly staff. So in spite of different modes of SST, the banks cannot choose to ignore their bank branches in India. Banks have to ensure that their customers are using the SSTs provided by them so that the branch visit frequency by their customers which was found to be the highest could be reduced. All the nationalised banks have to encourage semi urban customers to use more of SSTs than to depend on branch banking as it is found that the branch visit frequency of the semi-urban customers is more in urban areas. The banks can probably promote the usage of SSTs among their customers and provide incentives for usage by way of reduced banking charges if the transactions are done through SSTs. The results show that the users of SSBTs spend significantly more

time before the computers and browse internet more often than non-users, therefore the banks have to target those customers whose usage of computers, internet and other technology products are on the higher side for promoting SSTs usage. Lack of awareness among the non-users could be a major reason for not adopting the SSTs. The awareness among the rural customers is very low when compared to the urban and semi-urban customers.

The nationalized banks have to increase the awareness level among these customer segments through promotional measures such as advertising, publicity and so on. Awareness camps for SSTs adoption like CASA (opening of current account and savings account) can be organized by the banks which will create more awareness and there by a bank can train their customers. The nationalized banks have to encourage the existing users of SSTs such as internet banking, telephone banking, mobile banking and mobile wallet to use these services more frequently, as the study shows that majority of the users are using it only on a monthly basis. Perhaps the trepidation about the usage of services might be preventing them from using these services more frequently. The banks can encourage their customers to use these services more frequently through rewarding points and also by reducing the service charges. Many of private banks have advantage of 'Zero charges for fund transfer' the Nationalised banks should also provide such benefits for the frequent users. Performing mobile banking transactions is even more flexible as a mobile has become an indispensable device nowadays and perhaps the banks can convince the customers regarding telephone banking and mobile banking's low startup costs. Though ATMs are the most commonly adopted SSBT and the percentage of transactions through them exceeds even those of the traditional branch banking, they are still being used by majority of the users as convenient cash dispensers. There is a need to promote the usage of its value-added services such as mobile recharge, fund transfer and even some of the basic services such as cash deposit. As it is found that fund based transactions and other value added services are utilized only by a minority of the sampled respondents, the banks have to encourage the usage of these services in order to ensure the full potential of SSTs and safe way of doing it As the adoption levels of SSTs are found to be less in the case of female customers, banks have to put extra efforts in popularizing these services amongst female customers. The banks have to initially target the 18-27 age group (highly educated) to promote the SSTs so that the probability of adoption is more. In some of the services the age group 28-37 also becomes the potential customers so it is necessary to promote this group to create more adoption among the customers.

### **Conclusion-**

From the study it is found that banks in India are providing various services through electronic banking channels which are known as Self-Service technologies such as ATMs, internet banking, telephone banking, mobile banking, and mobile wallet and so on. In previous years only the private banks have taken initiatives in delivering these service but now the scenario has changed, more public sector banks have involved more efficiently in promoting the electronic channels among their customers. However, it is found that only ATMs are widely adopted by the customers. Adoption of other SSTs is still to pick up in a big way. The study has attempted to look at the consumer behaviour towards the adoption of these SSTs in totality as it has considered the factors pertaining to all the five prominent SSBT namely ATMs, internet banking, telephone banking, mobile banking and mobile wallet. The proposed model developed using the relevant constructs from the established frameworks from the behaviour and technology acceptance literature and similar studies done in other countries are able to explain the phenomenon of SSBTs adoption and usage reasonably well in the Indian context also. These models are successful in bringing out several implications relevant to both practitioners and academicians in this area. The study shows that with appropriate measures taken by banks in India, Self-Service Banking Technologies have great potential to transform the way Indians do banking to enrich and enhance their lives in this technological area.



Though private sector banks are satisfying their customers in computerized banking services than the public sector the personal variables of the respondents are differentiating the satisfaction level on computerized services of public and private sector banks in terms of their level of influences. The satisfaction level of the customers on the dimensions like efficiency of employees, compassionate service responsibility, grievances, assurance, and computerized loan services are highly influenced by personal variables of the respondents in public sector banks. Where as in the private sector banks the satisfaction level of the customers on the factors like accessibility, security, bank site, personal banking, single window services, level of computerization, Automatic Teller Machine Services, and e-bank service, over all computerizes bank services are highly influenced by personal variables of the respondents. Hence it is concluded that both private sector and public sector banks should increase their computerized services in some dimensions to satisfy their customers than the existing level. The customers prefer banks for better computerized services on their own discretion after considering various factors like security, efficiency, and responsibility in general.

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