IMPACT OF TECHNOLOGY ADOPTION IN PUBLIC SECTOR BANKS IN INDIA – AN ANALYSIS

Dr. S. Ganapathy

Professor, Department of Commerce, Alagappa University, Karaikudi, Tamilnadu.

Mr. S. Rajamohan

Part time Doctoral Research Scholar, Department of Commerce, Alagappa University, Karaikudi, Tamilnadu and Asst. Professor, Department of Management, Bharata Mata College of Commerce and Arts, Choondy, Aluva.

Abstract: *Resulting the developments in the information technology, the banking industry has undergone a massive change. Technology adoption has given new dimensions to the banking industry. It has allowed banks to offer much more to the customers, like facilities of card and telephone access, anytime and anywhere banking through 24 hours of ATMs, credit cards, debit cards, POS (Point of Sale) access. In fact, the technology has given the customers to have fingertips access to their accounts worldwide. The digitalization of information has facilitated the banking transactions very easy and convenient both to the bank and customer. Information technology can be used to develop products, services and other capabilities that will enable a bank to pull off strategic advantages. This research is aims to study the impact of technology adoption in public sector banks in India. Secondary data have been collected from various sources like articles and websites by the researcher for the study. The study reveals that adopting technology in public sector banks comes up with both benefits and challenges. Cost effective, non-stop banking, new products and services, data warehousing, a sustainable banking are some of the benefits experienced by Public sector banks from the adoption of technology. Cyber-crimes, customer response, choice of technology, data integration, shifting to alternatives and fraud are some of the challenges in adopting the technology by Public Sector banks.*

Keywords: Public Sector Banks, Information Technology, Internet banking, Benefits, Challenges

INTRODUCTION

Banking environment has become highly competitive today. Information technology refers to the acquisition, processing, storage and dissemination of all types of information using computer technology and telecommunication systems. Information technology architecture is an integrated framework for acquiring and evolving IT to achieve strategic goals. These technologies are used for the input, storage, processing and communication of information. Information technology includes ancillary equipment, software, firmware and similar procedures, services etc. Modern high throughput technologies are providing vast amounts of the sequences, expression and functional data for genes and protein.

Recent developments of banking sector in India are Internet, Society for worldwide inter-bank financial telecommunications (SWIFT), Automated Teller Machine (ATM), Cash dispensers, Electronic clearing service, Bank Net, Chip card, Phone banking, Tele-banking, Internet banking, Mobile banking, Anywhere banking, Voice mail, E-banking Etc., The basic need of Information Technology (IT) in Banking Sector are Meeting Internal Requirements, Effective in Data Handling, Extending Customer

Services, Creative Support for New Product Development, End-user Development of the Non-technical Staff. Emerging trends of information technology in banking sector are Outsourcing, Integration, Distinctive Edge, IT as Profit Centre, Prospering in Down Market.

Public sector banks are those banks where majority of stake (more than 50%) is held by a government. India at present 12 public sector banks after merger, including the merger and 1 payment bank, India Post Payment Bank.

REVIEW OF LITERATURE

Many researchers have worked efficiently on role of information technology in financial institutions. Ahmadirezaei (2011) concluded that investment in technology results in better facilitation of the customer and time saving of both customer as well as employees. Khajeh [2011] explained that banking industry influenced by technology in three different ways which are level of competition, economy of scale and creation of different delivery channels. Technologies can only lead to increased productivity or improve performance when combined with other resources effectively by human resources or when done effectively, and use technology productively and ethically (Dauda&Akingbade, 2011) advancement makes employees more effective and efficient (Lawless and Anderson, 1996). Technological advancement can improve firm performance as well (Li and Deng, 1999).

The majority of the banks in Zimbabwe have adopted internet banking, usage levels have remained relatively low, as not many customers are using this innovation in Zimbabwe. Regarding the challenges faced by banks in the adoption of IB, compatibility with existing legacy systems, cost of implementation and security concerns ranked high (Thulani, D., Tofara, C et al., 1970). The role of information systems and infrastructural new trends in banking sector was studied. The committee stressed the issue of development in banking infra services which helps to mobilize the services and resources through various ways (Rangarajan, 1991). As the Indian banks position themselves as financial service providers, banking business is getting redefined. Technology is unsettling the earlier business processes and customer behaviour is undergoing change. These have enhanced the forces of competition. Four trends are fundamentally altering the banking industry: consolidation, globalization of operations, development of new technologies, and universalization of banking (K.V.Kamath, S.S.Kohli, et.al., 2003). The relationship between technology and banking is found challenges ahead of the banking industry. All are using ATM"s and electronic mode to do banking transactions. So now a day it is very essential for the banks to adopt the new factors and use those to achieve their objective (S.B.Verma , 2007). The essentials of the banking and technology and how new trends are performing a major role to the growth of banks. Provide the new services and launching new banking products in the market is a major element in

information technology now a days. All efforts would take for better utilisation and trustworthiness of the stakeholders of banks (R.K.Mittal, 2008). The customers are satisfied with the quality of e-banking services. But they face technical as well as administrative and procedural problems. Further to promote e-banking services, it is of importance that the banks must ensure quality in customer service. 'Quality in work' and 'satisfaction of the customers' are the two key words, which must be given sternest attention to promote a product (P.A.Devi,,& V.Malarvizhi, 2010). The penetration of information technology in rural areas and outsourcing of information technology are major concerns of information technology in banking operations. Further, there is motivation to customers for increased use of information technology while transacting with banks. There is more need for strategic thinking by smaller banks while investing in information technology (Chitra 2010). The information technology promises to change the pace of banking in the next few years. Mobile banking and internet banking are going to be indoor in the banking sector in future. Even though IT systems are complex and sophisticated but they are energy guzzlers (Sreelatha. T, CH.ChandraShekar 2012). E Banking is likely to bring a host opportunity as well as unprecedented risks to the fundamental nature of Banking in India. The concept of Scope of E Banking is still evolving several initiatives taken by Government of India as well as Country's Central Bank, the Reserve Bank of India have facilitated the development of E-Banking in India (N. Jamaluddin, 2013). Banks and Money related Foundations remain the unabated focuses of digital culprits in the most recent decade. Prominently monetary profit is as yet the real inspiration driving most cybercriminal exercises and there is minimal shot of this changing soon. This paper centres around the specialized parts of different kinds of cybercrimes concerning the saving money units and their related effects (Harshita Singh Rao2019). The values of quarter smart advances of SBI range drastically from every enhance and there may be a growing trend except 2011-12 in the Total Advances of SBI. There is a fluctuating trend of Growth Rate in each total advance as an entire as well as in each area. Advances (A.Thangam, S.Ganapathy, et.al., 2019). (Ganapathy & Rajamohan 2020) the researcher has adopted percentage analysis and ranking method. As per the findings, some of the effects of technology related stress faced by respondents are: psychological and physiological, affects work and family environment, increase in absenteeism, changes in worker's attitude and reduce job performance. It is suggested that the bank employees should be made educated about technologies.

OBJECTIVES OF THE STUDY

- To study the Technological developments in public sector banks.
- To evaluate the benefits achieved by public sector banks for adoption of technology in India.
- To analyse the problems faced by public sector banks for adoption of technology in India.
- To offer suggestions to improve banking while adopting technology.

METHODOLOGY

The research is purely based on secondary data. For this study the data has been collected from the Reserve Bank of India circulars and bulletin, business dailies such as The Economic Times, Financial Express, Business Standard and various other journals, magazines and websites which constitute the secondary sources of data.

TECHNOLOGICAL DEVELOPMENT IN BANKING SECTOR

Dr. Rengarajan committee was entrusted to study the possibilities and stages involved in computerization of banks and to prepare guidelines for the same in the year 1983. The report submitted by the committee in the year 1984 was known as the First Rangarajan committee Report. The objectives of the computerization of banks are to improve customer service, decision making on productivity and profitability.

The various stages of computerization were Stand-alone computer system, Multi user computer networking, Branch –level computerization and total branch automation. Next stage of computerization at Regional/ Circle / Zonal office acts in between branches and head office . The computerization at head office level activities are divided into different functional area like operations, planning, human resource development, international business and services etc.

Introduction of Local Area Network (LAN) and Wide Area Network (WAN) changed the banking environment tremendously . The concept of LAN is very important for branch computerization whereas WAN generally used to interconnect branches with regional offices, and regional office to head office.

Another development in banking was introduction of core banking system, has a centralised branch computerization model where branches are connected to central host. It incorporates branch automation modules and online multiple delivery channels like ATM, ABB, Debit Card, Tele- banking, mobile banking, internet banking etc.

Online Banking: Online banking means managing banking activities using either financial institution's internet banking website or their mobile banking app for smart phones. With online banking the customer can view their account balances, make payments, transfer money, and update your personal details with your financial institution.

Electronic Banking: Electronic banking, also known as electronic fund transfer (EFT), uses computer and electronic technology in place of checks and other paper transactions. EFTs are initiated

through devices like cards or codes that let you, or those you authorize, access your account. Many financial institutions use ATM or debit cards and Personal Identification Numbers (PINs) for this purpose.

ATM : *ATMs* are electronic terminals that let you bank almost virtually any time. To withdraw cash, make deposits, or transfer funds between accounts, you generally insert an ATM card and enter your PIN. Some financial institutions and ATM owners charge a fee, particularly if you don't have accounts with them or if your transactions exceed the prescribed limit set by the banks.

Mobile Banking: Mobile phone can assist the common man to conduct banking transactions any time and from anywhere. Use of mobile phone handsets as a payment device is well developed in India. Technology used for mobile banking must be secure and should ensure confidentiality, integrity and authenticity.

Internet Banking: Banks are using electronic and telecommunication networks for delivering a wide range of value-added products and services to their customers. The delivery channels include dial-up connections, private networks, public networks etc., and the devices include telephone, personal computers etc.

The following table shows transformation from traditional banking to modern banking:

Table – I

S.No	Traditional Service	Alternatives	Medium	Services Available
1.	Brick-Mortar services	Automated Branches	PC and LAN	Instant deposit and withdraw money, getting statement ,DD, calculation of Interest etc.,
2.	Branch Banking	Core Banking	PC and Internet	Instant deposit and withdraw money, getting statement, DD, cheque clearance and depositing, stop payment etc.,
3.	Manual Note Counting	Note Counting Machine	Electronic device	Instant note and bundle of notes counting
4.	Formal Cheque	MICR Cheque	MICR technology	Instant cheque clearance
5.	DD/MT/TT	EFT	Internet core solution (CBS)	Instant fund transfer
6.	On counter Cash withdraw	Debit card	ATM	Withdraw money, balance enquiry, account statement, mobile recharge, make donation, card to card transfer , utility bill payments.

7.	On counter Cash withdraw	Debit card	Point of Sale(POS)	Mobile recharge, make donation, card to card transfer , utility bill payments.
8.	Letter of Credit	E-Money	Credit Card	Purchasing and payment of utility bill payments
9.	Branch Banking	Internet Banking	PC and Internet	Balance enquiry account statements, stop payment order, EFT, RTGS, purchasing and payment of utility bill payments
10.	Branch Banking	Mobile banking	Mobile phone, SMS, 3G,4G	Balance enquiry account statements, stop payment order, EFT, RTGS, purchasing and payment of utility bill payments

Source: T.R.Srilatha and A. Sudhakar (2018).

BENEFITS OF TECHNOLOGY ADOPTION IN PUBLIC SECTOR BANKS

Nowadays banks are facing the challenges of tightening budgets and continuous demands to reduce costs while handling the standard flow of new regulations. They are also under heavy pressure to meet the increasingly complex demands of the real-time, digital customer technology is inevitably playing a core role in helping them address these issues. Public Sector Banks uses various technologies for providing good and satisfactory services to customers. The following are the advantages of adopting technology in banks.

- Technology services in Public Sector Banks will minimize the cost of handling, so cost reduction is the main benefit from adopting technology to banks.

- Technology enabled the banks to move from a concept of Branch Customer to Bank Customer. Free flow banking from anywhere and at any time banking provide added comfort and convenience to the present-day tech-savvy customers.

- New products and services other than banking launched with the help of technology.

- Presently data warehousing becomes a very useful tool in the hands of management for decision making. Data warehousing enables the banks to pool enormous amount of data at one place and slice and dice the data for the purpose of analysis. This enables to know the demographic profile of customers, potential customers and the most profitable business lines are all identified and appropriate direction to the business strategies decided.

- With the help of technology banking industry is able to provide banking services in unbanked areas. Technology plays a major role in financial inclusion, a sustainable banking theme very relevant to a country like India that has a large unbanked population.

BENEFITS OF TECHNOLOGY

CHALLENGES FACED BY PUBLIC SECTOR BANKS IN TECHNOLOGY ADOPTION.

Public Sector Banks are facing many challenges with the advent of adopting new technologies. The following are the major challenges faced by the Public Sector bank in adopting the technology.

DATA INTEGRATION

In India largest portion of population is connected with the banking sector. Data of clients are scattered, therefore collection of this data in a systematic manner is very indispensable. New Technologies should help Public sector banks for deliver strong and reliable services to their customers at lower cost. Besides this technology should also to generate and manage information successfully. Information contains data collected based on principles of integrity, reliability and accuracy. Public Sector Banks are collecting enormous quantities and warehousing volumes of data relating to customers and transaction. The information is subjected to meaningful analysis, usage and creation of a data base with an objective to the diversified internal and external management information system requirements.

THE PROBLEM OF FRAUD

The issue related to the security has become one of the major concerns for Public Sector Bank. Because of increasing users and new services in banking – productivity, efficiency and quality are essential to survive in this competition. A large group of customers refuse to choose e-banking facilities because of fear of fraud, uncertainty and security concerns. Creating and maintaining trust is the major hurdle to online banking for most of the customers. They have a perception that online or internet banking is risky due to which frauds and misbehaves can take place. So, it is a big challenge for bankers to make clients satisfied regarding their security issues.

According to RBI report, fraud cases in Public sector bank were total of 3766 which is the highest among other sectors of bank. As per the report the number of fraud cases was increased by 15 percent on year on year basis. The following is the statement showing number and amount of fraud cases in Public Sector Banks for the past 10 years

Table II

Number and amount of fraud cases in Public Sector Banks for the past 10 years

Year	No. of Cases of fraud	Amount in ₹ crores
2009-10	4003	13672.46
2010-11	3530	14748.5
2011-12	3910	20210.86
2012-13	4504	24819.4
2013-14	4359	21542.03
2014-15	4269	23694.65
2015-16	4207	16779.42
2016-17	3927	25883.98
2017-18	4228	9866.23
2018-19	2836	6734.65

Data belongs to the period from 31[st]March2010 to 31st March2019.

Source: https://factly.in/

CHOICE OF TECHNOLOGY

Without any doubt, advent of technology in banking sector saves a lot of time. Every bank in India, especially public sector banks are updating themselves by adopting various technologies. But problem arises when adopts the wrong choice of technology due to insufficient control processes and inappropriate system design. This wrong selection of technology may lead to a loss in terms of financial losses well as loss of brand image as well as goodwill (Laroiya, R. 2002). Due to this reason, many banks rely on third party service provider for banking technology, which may incur high costs.

CYBER CRIME

Cybercrime is a major challenge for banks which adopts technologies. Nowadays various incidents pertaining to theft of personal information and abuse of ATM's is happening everywhere. The following are various kinds of cybercrime.

HACKING

Hacking is a system to increase unlawful and unauthorised access to a PC or system so as to take, degenerate, or erroneously see information.

PHISHING

Phishing is a procedure to obtain private data like usernames, passwords, and charge/Master card subtleties, by imitating as a reliable material in an electronic correspondence and replay similar subtleties for harmful reasons.

VISHING

Vishing is the criminal routine with regards to utilizing social designing through phone framework to access private individual and budgetary data from the general population with the end goal of monetary reward.

E-MAIL SATIRIZING

E-mail Satirizing is a procedure of concealing an email's real starting point by shaped the email header to seem to begin from one real source rather than the real beginning source.

SPAMMING

In Spamming, undesirable and spontaneous messages typically sent in group, trying to constrain the message on individuals who might not generally get it are alluded to as Spam Messages.

DENIAL OF ADMINISTRATION

This attack is described by an express attempt by aggressors to anticipate real clients of an administration from utilizing that benefit by "flooding" a system to prohibit real system traffic, upset associations between two machines to deny access to an administration or keep a specific individual from getting to an administration.

ADVANCED CONSTANT DANGER (ACD)

ACD is portrayed as a lot of intricate, covered up and progressing PC hacking forms, frequently focusing on an explicit element to break into a system by keeping away from location together delicate data over a critical timeframe. The assailant generally utilizes some kind of social designing, to access the focused-on system through authentic methods.

ATM SKIMMING

ATM Skimming is a means of trading off the ATM machine or POS frameworks by introducing a skimming gadget on the machine keypad to show up as an actual keypad or a gadget made to be fastened to the card pursuer to be similar to a piece of the machine. In addition to that, malware that takes Visa information specifically can likewise be introduced on these gadgets. Effective execution of skimmers causes in ATM machine to gather card numbers and individual unique proof number (Stick) codes that are later repeated to complete fake exchanges.

To avoid these cybercrimes, several security measures to be adopted for their documents such as, facts machine and customer deliverable instruments. It is also mandatory that consumer personal records and different information accessible with banks is secured adequately to ensure that fraudsters do no longer get admission to it. All safety measures must be beneath continuous review for in addition strengthening. There is a need for comprehensive Information System Security policy has to be put in vicinity via the bank for safeguarding the sensitive information of customers.

CUSTOMER'S RESPONSE

Consumer response on adopting technology by public sector bank is another question mark as majority of Indian population deals with Public Sector Bank. Any change in the regular practise in banking operations might affect the stakeholders. So, customers' responses to the adoption of technology are a major challenge. Bank customers should understand the merits and demerits of various products. Banks must educate the consumers regarding the use of technological products, which in turn will be a positive impact on bank performance. The entire institution of banking is built on consumer trust. It helps not only in retaining the existing customers but also attracts new customers. This activity will automatically improve the quality in banking services and development of banks.

SHIFTING TO ALTERNATIVES

Due to the advent of Prime minister's Digital India, Cash less economy and so on, every bank started to adopt new technologies. But the problem arises when the clients are feeling hard adopt the new technologies, as the procedures were cumbersome. The bankers should frame the procedures in such a way that is user friendly to the clients. The customers get to know the pros and cons of alternative devices in banking services. The following are some of the alternative services in banks.

SUGGESTIONS

This period is digital era, where everything is digitalised. Banks need to be updated with technologies in order to survive in this competitive world. Some of the suggestions are

- The public sector banks should focus on the choice of technology.
- The technology adopted by the banks should be user friendly.
- The customers should be educated on the application, pros and cons of technology.
- Banks should ensure security in its operations.

CONCLUSION

Information technology is a means for increasing productivity and efficiency in operational levels. Banking, which is primarily a service industry becoming more and more technology dependent. The most visible impact of technology is reflected in the way the banks respond strategically for making its effective use for service delivery. With the introduction of technologies, the transactions of banking and delivery of banking merchandise will grow to be an extra customer friendly. To cope up with the fast modifications in the technology, legislation and market space, banks have to constantly innovate and try to remain beforehand of the curve. The study reveals that adopting technology in public sector banks comes up with both benefits and challenges. Cost effective, nonstop banking, new products and services, data warehousing, a sustainable banking are some of the benefits experienced by Public sector banks from the adoption of technology. Cyber-crime, customer response, choice of technology, data integration, shifting to alternatives and fraud are some of the challenges in adopting the technology by Public Sector banks. As today's world is digitalized, strength of protection is of very great importance.

References

[1] A Thangam, S Ganapathy, (2018). Deposit And Lending Performance Of State Bank Of India, Indian Journal Of Applied Research, 7(11).

[2] A.Thangam, S.Ganapathy and S.Nachammai (2019). Sector wise advances of State Bank of India. International Journal of Scientific and Technological Research. 8 (12), 1326- 1332.

[3] Ahmadirezaei, H., 2011. The Effect of Information Technology in Saderat Banking System. Procedia Social and Behavioural Sciences.)

[4] Alagarsamy, T., & Ganapathy, S. (2018). Trend and growth rate of deposit mobilization of Indian Bank-An analysis. International Journal of Advanced Research in Management and Social

[5] Arundhati Bhattacharya (2015). New Paradigm in Business Strateies of Bank. *The Journal of Indian Institute of Banking and finance.*

[6] Ashish K.Sartape (2016). Information Technology and Banks: Trends, Issues and Challenges. IRJMS 2(12), ISSN (online): 2454-8499.

[7] Chitra (2010) *IT* Emergence: Recent Trends in Banking Industry of India http// www.article base. Com/ information-technology- in- banking- industry- of- India- 1981838.html.

[8] Dauda, D. Y., &Akingbade, W. A. (2011). Technological change and employee performance in selected manufacturing industry in Lagos state of Nigeria. Australian Journal of Business and Management Research, 12.

[9] Devi, P. A., & Malarvizhi, V. (2010). Customers' Perception of E-banking: Factor Analysis. *IUP Journal of Management Research*, *9*(6).

[10] Ganapathy, S & Rajamohan S.,(2020), Technology Related Stress In SBI Employees- With A Special Reference To Ernakulam District In Kerala State. Aegaeum Journal, 8(5). 2020.

[11] Ganapathy,S., Amarjothi,P., &A.Thangam., (2020). Customer Awareness towards Green Banking in State Bank of India. Our Heritage, 68(30),4029-4037.

[12] Harshita Singh Rao. (2019). Cybercrime in banking sector. International Journal of Research - Granthaalayah, 7(1), 148-161.

[13] https://financialservices.gov.in/banking-divisions/public-sector-banks

[14] Kamath, K. V., Kohli, S. S., Shenoy, P. S., Kumar, R., Nayak, R. M., Kuppuswamy, P. T., & Ravichandran, N. (2003). Indian banking sector: Challenges and opportunities. *Vikalpa*, *28*(3), 83-100.

[15] Khajeh, S., 2011. The Impact of Information Technology in Banking System (A Case Study in Bank Keshavarzi IRAN). Social and Behavioural Science.)

[16] Laroiya, R. (2002), "Client Drain from Public Sector Banks: Causes and Strategies", Biz Craft, Edition 2 (April to October, 2002), Journal of Management Science, Bareilly, pp. 29-35.

[17] Li, Y. and Deng, S.L. (1999), "A methodology for competitive advantage analysis and strategy formulation: an example in a transitional economy", European Journal of Operational Research, Vol. 118, pp. 259-70.

[18] P.A.Kalyanasunda (2014) "*Role of Technology in Modern Banking"* The Journal of Indian Institute of Banking and finance July-Sep 2014.

[19] R.K.Mittal et al (2008) Emerging Trends in the Banking Sector *Macmillan India Ltd.* Vol.1.

[20] S Ganapathy, A Thangam, (2017). A Study on Financial Mobilization of Commercial Bank with Special Reference to Northern Region of India. , International Journal of Advanced Research in Management and Social Sciences,6(10). 51-58.

[21] S.B.Verma et al (2007) E-Banking and Development of Banks, *Deep and Deep Publications Pvt Ltd.*Sciences, 7(10), 1-11.

[22] T.R.Srilatha and A. Sudhakar (2018). Adoption of technology in banks – issues and challenges. *Journal of Emerging Technologies and Innovative Research,* 5(2), 443-449

[23] T.Sreelatha , CH.ChandraShekar (2012) Role of Technology in Indian Banking Sector IJMBS. 2(4), ISSN No: 2231-2463,36-40.

[24] Thangam, A., Ganapathy, S., & Nachammai, S. (2020). Customer Satisfaction On E- Banking Services Of State Bank Of India Zenith International Journal Of Multidisciplinary Research, 10(5), 36-41

[25] Thangam, A., Ganapathy, S.,(2017). Deposit Mobilization Of Commercial Banks: A Study With Special Reference To Central Region In India. Asian Academic Research Journal of Social Science & Humanities,ISSN : 2278 – 859x ,4(7),

[26] Thulani, D., Tofara, C., & Langton, R. (1970). Adoption and use of internet banking in Zimbabwe: An exploratory study. *The Journal of Internet Banking and Commerce*, *14*(1), 1-13.

[27] Yiu, C. S., Grant, K., & Edgar, D. (2007). Factors affecting the adoption of Internet Banking in Hong Kong—implications for the banking sector. *International journal of information management*, *27*(5), 336-351.