

TECHNOLOGY BANKING: A GLANCE THROUGH LITERATURE

Abstract

Technology banking is a recent phenomenon in Indian banking sector. It is a part of digitalization. The New Economic Reforms of 1991, paved way for technology banking. The emergence of technology banking has created both opportunities and challenges for government and banking industry. It has helped the banking sector to meet the growing demands and withstand competition. The consumers with the help of technology banking are able to do anywhere any time banking. It is known to be the best means to achieve financial inclusion and a preventive measure for corruption. But technology banking raises security issues, legal problems and may affect even the effectiveness of monetary policy. Adoption of technology banking is continuing in Indian banking sector and it is a topic of interest for researchers and academicians. Reviewing the available literature, technology banking is gaining popularity, but only a section of the society can avail it and use it. Thus, this paper focuses on giving insights on various aspects of technology banking by reviewing the existing works.

Keywords: ATM, online banking, TAM, financial inclusion

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I. INTRODUCTION

Digitalization is the new buzz word which has embraced almost all sectors. Digital technologies provide opportunities for the financial institutions to withstand the challenging market environment. By digitalization, banks can have a more vibrant customer relation through multiple channels, services and products. It makes banking environment more competitive and efficient. Both customers and banks benefits out of technology banking. It enhances economic growth and modernizes the economy. Policy makers have discovered a strong relation between technology adoption in financial sector and economic growth. It is also a means to achieve financial inclusion. A plethora of literature is available in the area of digitalization. Thus, those works related to technology banking and related aspects are summarized in to following heads:

1. Financial sector and economic growth
2. Indian banking sector after New Economic Reforms
3. Studies on Automated Teller Machines
4. Studies on mobile banking.
5. Studies on internet banking
6. Technology banking and financial inclusion.
7. Application of Technology Acceptance Model (TAM) in technology banking.

II. FINANCIAL SECTOR AND ECONOMIC GROWTH

There exists a strong relation between financial sector and economic growth because financial sector and real sectors are closely related (Schumpeter). The relationship has been established in a cross-country study of 77 nations (king et.al, 1993). They specified that long run rate of economic growth; productivity and capital accumulation can be predicted by using the level of financial intermediation. This has been an area of interest for many researchers. There exists a counter argument for the relation between economic growth and financial sectors. It is said that during the initial stages of economic growth, financial markets are accessible for the richer section in the society. And only with higher growth, more people join the financial system leading to much higher growth (Jovanovics, 1990; Zilibotti, 1994). Later on it was found that together with developments in banking sector stock markets too determine the rate of capital accumulation, productivity and economic growth (Leoine et.al, 1996). The relationship between financial development and economic growth has been said as 'virtuous' where the development of financial system has been supported by increasing levels of income. The situation where development of financial system is impossible due to low income level can be termed as 'under development trap' (Berthelemy et.al, 1996). Further, based on this relation by adding the role of legal and accounting systems, the difference in financial development, thereby in economic growth was explained (Levine et.al, 1999). The long run causal relationship between economic growth and financial development for South Asian countries such as India, Pakistan and Bangladesh has been established for the period 1975-2005. The relation was established using error correction models and was proved that financial development leads to economic growth (Wadud, 2009). There exists an opinion that it is economic growth that leads to financial development (Guryay, 2007; Olvitan, 2012). The studies conducted in Northern Cyprus and Nigeria establishes the same. The studies conducted in India have also established the relation between economic growth and the growth of banking industry. A study which has taken human capital besides income level

concluded that low human capital development leads to low savings thereby weakens financial sector (Acharya et.al, 2009). Another study states in short run per capita income leads to the development of financial markets whereas in the long run improvement in financial markets leads to increase in economic growth (Aggarwal et.al, 2013).

III. OVER VIEW OF INDIAN BANKING SECTOR AFTER NEW ECONOMIC REFORMS

The Indian banking sector has been evolving step by step over decades. It is after nationalization of 14 major banks in India in 1969, the sector experienced a tremendous change. A new era started in Indian banking industry with the introduction of Financial Reforms as a part of New Economic Reforms in 1991. The Indian banking sector has attracted the world's attention during the time of global financial meltdown. This section deals with the studies on different aspects of Indian banking sector.

The financial sector reforms aimed at making Indian banking sector competitive at international level to improve efficiency, productivity, profitability and technologically advanced. A number of liberalization measures were introduced in this regard.

The reform measures have resulted in positive impact over scheduled commercial banks in India. Undoubtedly, the overall bank profitability has improved. But the major portion of benefits out of reforms has been reaped by private sector banks and foreign banks as the period was more or less encouraging privatization. The public sector banks were lagging behind the private and foreign banks in various aspects (Koudal, 2012). One of the studies used Porter's five forces model and focused on developments, opportunities and challenges faced by Indian banks and was found that the need of the hour is to establish an enabling environment in banking sector rather than a limiting one (Samreen,2014). Another study focusing on the operational efficiency of commercial banks in India concluded that employee efficiency and internal management is better in foreign banks than public sector banks and private sector banks. The conclusion was based on various parameters such as branch expansion, profitability and productivity (Mohapatra.et.al, 2015). Another work examined the impact of reforms on public sector banks, private sector banks and foreign banks on the basis of their investment in government securities, credit to GDP ratio, credit-deposit ratio, proportion of various types of loans and share of business. The variation in the working of public sector banks, private sector banks and foreign banks were once again established. Foreign banks seem to be more efficient than public sector and private sector banks (Walia, 2012). Another work has found out that various regulatory measures introduced in Indian banking industry has led to change in the focus of public sector dominating banking system from social banking to a more profitable and efficient banking sector. The infusion of private equity capital was one of the reasons. Also it could result in shifting banking operations from traditional mode to technology oriented mode (Dwivedi, et.al, 2011). Attempts were made to look in to the productivity performance and technical efficiency of scheduled commercial banks in India by creating a multiple output or multiple input technology production frontier using semi-parametric estimation methods (Rajan, et.al, 2011). But studies which concentrated on time period, prior to reforms, opine that public sector banks were the most efficient ones comparing to private sector and foreign banks (Bhattacharya et.al, 1997; Sathye, 2003). But the study conducted for measuring efficiency of all the bank groups in the post reform period, i.e, 1999 to 2006, have concluded that

efficiency is high for foreign banks even though the financial position of public sector banks improved (Uppal,2011). The performance of Indian banking sector has been analyzed using DEA and TOBIT model for the period 1999 to 2003 found out that in terms of efficiency State Bank of India has been followed by private banks and other nationalized banks. The efficiency has been measured in terms of capital adequacy (Gupta et.al, 2007). The study based on profitability index for 2001 to 2006, reveals, in the selected period profitability position was better for Indian banks comparing to previous periods (Singla, 2008).

Now the banks are focusing on adopting an integrated approach in risk management. Indian banks are following BASEL accords to keep themselves at par with international standards. They try to maintain a healthy capital base for mitigating various forms of risks. They have a framework for management of credit risk and derivatives. The rural areas are experiencing a rise in income which increases demand for banking services. Thus the banking sector will be positively influenced by growth in rural income. The branch licensing policy has been liberalized by the government to reach the unbanked regions (Indian Brand Equity Foundation, 2015).

IV. STUDIES ON AUTOMATED TELLER MACHINES

ATMs are the most popular one among the technology banking instruments. Many studies (Pandian et.al, 2012) are available that states consumer prefer ATM over other forms of technology banking instruments. Technology banking instruments are introduced by international banks and private banks in India to overcome their limitation regarding number of branches. But later on public sector banks also started investing in technology banking to withstand competition. In today's world, money is a necessity for survival and ATMs provide the customers with money whenever needed without visiting a bank branch.

The customers of ATM have a positive attitude towards using ATMs as it is easy to use , conveniently located and can access any time (Brownlie,1989; Malcom,2008). It helps in effective service delivery (Musiiime et.al, 2010). Customers use variety of services provided by banks and will assess each service and their satisfaction is a result of how each service will contribute to the whole service delivery mechanism. Here the usage of technology is inevitable to offer better services to customers (Patricio et.al, 2003).ATMs are well established in the urban area but are not so in rural regions. Thus the banks are now focused on popularizing ATMs in rural area (Musiiime et.al, 2010). A study held in Gulbarga District to know the impact of ATM on consumer satisfaction found out that, ATM is mainly used by individuals of the age group 25 to 35 years. It is more popular among the males than the females. The study tells, nearly 85 per cent of the sample respondents are aware about extra charges related to ATMs. The respondents are satisfied with the number of ATMs available to them. The study also recommends popularizing of ATMs (Kukkudi, 2006).

The factors affecting satisfaction of ATM usage includes cost of ATM usage, efficient functioning of ATMs, functions offered by ATMs, convenient locations, safety, customer friendly operations and adequacy in number of machines (Al-Hawari et.al,2006). Another study found that customer satisfaction towards ATM is determined by the year of establishment of banks, performance of the bank and size of the bank (Singh et.al, 2009).According to some researchers (Kumbhar,2011) the customers' perception on cost effectiveness of using ATMs is same as the case of both public sector banks and private

sector banks. The cost effectiveness of ATM is determined by the quality of service it. Another study has looked in to ATM services, factors affecting the choice of ATM and its relation with customer satisfaction. The customer satisfaction has been analyzed at Material Customer Satisfaction (MCS) level and Abstract Customer Satisfaction (ACS) level. Material customer satisfaction is related to post-purchase behavior, fee paid by the customer and the frequency of problems they face. Abstract level satisfaction is related to the facilities provided by the banks. The study establishes that the customer satisfaction is directly related to fee charged by the banks. For the rural population, who faces difficulty in using ATM due to illiteracy, biometric ATMs are a suitable option. Thus ATMs even though a part of technology banking, suits customers from different socio-economic conditions.

V. STUDIES ON MOBILE BANKING.

The innovations and advancements in the telecommunication sector have led to delivery of banking services at the door step of the consumer, via, mobile banking. it is the provision of banking services to the customers on their mobile devices (Sharma et.al,2011). Mobile banking refers to the interaction of a customer with his bank through mobile phone (Barnes et.al, 2003). Mobile banking has many advantages, just like other technology banking instruments. In India, banks promote the usage of technology banking as they can reduce the operational cost while they increase the customer base (Peterson, 2009). The transactions through mobile banking are on rise; still mobile banking is yet to achieve its full potential in India (Ashta, 2003; Wang et.al, 2003).

The most popular form of mobile banking is SMS and it was launched in India in 2002. Banks use SMS services to give alerts on account details and transactions. Today banks are using WAP – based internet websites and mobile banking applications to provide mobile banking services to the customers (Mehta, 2012). Mobile banking offers a number of banking choices to the consumers. They can easily avail their account details, transact money etc (Clark, 2008). Mobile banking has a great future in India as it is cheap comparing to desktop and can have internet connection (Vyas, 2009). The use of mobile banking by urban Indian customers are on rise as mobile banking can be used anywhere at any time (Rugimbana, 1995 ;Karjaluoto,2002). Thus mobile banking could be the new banking channel in India (Unnithan, et.al, 2001).

Mobile banking is a powerful delivery channel not only because it provides immediate access to the customers' account but also provides a control to customer on his/her personal finances (Rao et.al, 2003; Vyas, 2009). Many other researchers (Dasgupta et.al, 2011; Gupta, 2013) also agree the bright future of mobile banking in India. In one of the study, it has been found that customers tend to avoid internet banking once they start using mobile banking (Polatoglue et.al, 2001; Burney et.al, 2001; Karjaluoto, 2002; Black et.al, 2002; Souranta, 2002). M-commerce is possible with the help of mobile banking. it enables the customer to sell their stocks , transact money for the purchase etc (Kim et.al, 2009 ; Luo et.al,2010 ; Tiwari et.al,2007). Mobile banking has the potential to achieve financial inclusion once an efficient infrastructure and financial security is ensured (Comner, 2009). It can ensure consumer development and reduce corruption. The analysis on economic effects of mobile banking has found that it is capable of offering different services to customers so that they can manage their finances without actually handling cash (Anaysi et.al, 2009). It is also

note worthy that mobile banking business itself contributes to economic development (Scornavacca et.al, 2006).

The determinants of intentions to use mobile banking have been studied by using Technology Acceptance Model with trust as an element. It was found that information quality and structural assurance are the main factor which affects trust, thereby influencing perceived usefulness and thus the intentions to use mobile banking by the customers (Luarn et.al, 2005; Gu et.al, 2009; Zhou, 2011). Another study found that perceived ease of use, perceived usefulness, information about mobile banking and perceived credibility are important factors that determine the usage of mobile banking (Amin et.al, 2008). Together with perceived usefulness, compatibility and associated risk do influence adoption of mobile banking (Lewis et.al, 2010). Some other researchers (Riquelmae et.al, 2010) opine that it is not only usefulness but also social norms and social risk play a significant role in determining the usage of mobile banking and social norms have a stronger influence on female users compared to male users. Whereas males are more or less concerned about usefulness of mobile banking. Other factors which affect usage of mobile banking are gender, income and education (Palani et.al, 2012).

It is a big challenge for the banks to provide mobile banking services as a variety of devices are available (Mas, 2008; Lyman et.al, 2008). It is important from the part of government and banks to ensure safety and security in transactions via mobile banking. it is necessary to provide interoperability of electronic systems, protection against money laundering and to ensure Know Your Customer practices (Hayat, 2009). Another study has come up with the opinion that, if there is security and convenience in electronic transactions, unbanked will only transact through mobile banking or internet banking (Comminos et.al, 2008). It is found that the mobile banking customers in India are very much bothered about fraudulent practices, account misuse etc. there are issues related to user friendliness of mobile banking in different types of transactions and soft ware applications (Sharma et.al, 2009). Other issues related to mobile banking are revenue sharing agreements with mobile service providers and banks which often creates some disputes (Banzal, 2010). For the customer, mobile banking is challenging as the operations have to be done through small screen and keypads were chances are there for mistakes (Kim et.al, 2009).

VI. STUDIES ON INTERNET BANKING

The internet banking was an outcome of advancements in telecommunications and technology. Internet banking differs from traditional banking in the mode in which transactions are made. The online banking services started for the first time in 1981 in Newyork. Earlier internet was mainly used by producers to sell their products and gradually it has extended. By internet banking we mean, use of internet as delivery channel for as a delivery channel for banking services. This facilitates the customer to use banking services anytime, anywhere. They can access their account details any time and can do transactions. The volume and value of transaction through internet banking is increasing with passage of time. The users of internet banking find it highly convenient and useful in nature. Internet banking also provides facilities such as bill payment, deposits, payment loans etc automatically, thus the consumer need not visit the branch. The banks also encourage the customers to use internet banking as it is cost saving for banks and can offer better service experience to the customers.

Many researchers (Jun et.al, 2001) have given their own idea on internet banking. It is the use of internet as a delivery channel for banking services which include electronic bill payment, opening of account and transferring of funds. In other words internet banking is a facility which the consumer can access with the help of internet connection in mobile phone or personal computer (Zeithaml et.al, 2002). It is an integrated system that provides customers a convenient, flexible and inexpensive platform with integrated services through online such as saving account, loans, certificate of deposits, money market account, card accessibility, investment services, insurance, portfolio management etc (Battacherjee, 2001). It is the best example for the application of information technology in service industry (Sui et.al, 2005). Researchers (Daniel, 1999) have pointed out that the delivery of internet banking can be through different devices such as mobile phone, personal computer etc.

It not only provides consumers with a chance to access their personal accounts but also electronic markets (Zeithaml et.al, 2002). This has led to the increase in internet users and internet banking. By using internet banking, the efficiency of the banks has substantially increased which encourages the banks to invest further in internet banking (Mosocha et.al, 2011). The internet based services provided by the banks can be divided in to informational, communicative and transactional. Informational services include information on products and services, communicative services include interaction between banks' system and the customers and transactional services include facilities for the customers to make transactions with the banks. Transactional services are risky comparing to other services. Thus there is no doubt that internet banking offers the banks with a number of opportunities and threats (srinivasan, 2012).

In one of the studies, which has compared banks who are providers of internet banking services and non-providers of internet banking services found that there is no statistical correlation between profitability of the banks and internet banking. The study has used univariate statistical analysis and has taken in to account variables such as cost efficiency, profitability etc (Singh et.al, 2014). One of the greatest advantage of internet banking is that it provides customer satisfaction since customers have access to their accounts at any time from any where they want to (Chavan et.al,2010). Researchers (Janal et.al, 2013) have looked in to the reasons behind security breaches. Flaws in security settings can cause loss on money and confidence in bank for the customers and credibility loss for the banks. Security issues are not only because of inadequacies in banks policies but also due to lack of awareness by the customers. Thus in order to ensure security in internet banking transactions, it is important to create adequate awareness to the customers. Banks need to take adequate awareness to the customers regarding safe transactions. For this bank need to take appropriate measures to enhance awareness of the customers on internet banking.

A study which has measured the progress of internet banking through various parameters such as number of ATMs, computerization of branches, transactions through retail modes concludes that, in the future, internet banking will be the preferred mode of banking and not acceptable mode of banking (Roshanlal, et.al, 2012). One of the customer centric studies in Kerala points out that internet banking is popular among urban keralites who are young, well qualified and are earning high (Raju,2015). The idea of internet banking is gradually gaining acceptance as government and banking sector are taking much efforts to popularize internet banking (Chauhan, 2015).

VII. TECHNOLOGY BANKING AND FINANCIAL INCLUSION

Financial inclusion is one of the major objectives of technology banking. It is widely believed that by way of using technology banking instruments, it is possible to bank the unbaked in a cost effective and efficient manner. The importance of financial inclusion lies in the fact that it helps the poor to improve their standard of living by way of increase in income, once they are in to a formal intermediation system. The suppliers of financial services are benefitted out of low cost savings. It helps the government to channelize and allocate fund in an efficient way, thus can reduce poverty. Thus financial inclusion positively affects the economy as a whole (Subbaroa, 2013). According to theories of growth, investment is crucial for enhancing economic growth for which financial intermediation is essential. The relation between economic growth and financial sector is already established in many studies (Harrison et.al, 1999). Financial inclusion will help every section of the society to access financial services and thereby to capital (Harrison et.al, 1999). Thus by financial inclusion no section in the society is excluded of capital. It also helps in mobilizing more resources for investment. In under developed and developing nations where informal financial system is prominent people tend to loss their hard earned money and a major proportion of savings lies outside the formal financial system without contributing to the development of the nation.

The basic necessity to provide financial inclusion is infrastructure both physical and financial infrastructure. To make credit available to all, there is a need to create an efficient financial infrastructure. Studies (Pal et.al, 2012) have found that to increase the level of financial inclusion, the availability of banking services should also be increased. So that it can be utilized especially by low income earning groups. A well developed and accessible financial infrastructure helps the poor to identify the assets from financial instruments (Chandra et.al, 2000). Developing countries like India lacks a well developed financial infrastructure due to many constraints. The commercial banks are not willing to set up rural branches due to lack of profitability and higher cost. Some of the empirical studies (Sarma et.al, 2008) point out that presence of physical infrastructure in terms of internet facilities, telephone etc helps in increasing the level of financial inclusion. A study conducted in rural West Bengal found that telecommunication, electricity facilities etc can build a better supply chain management which will enhance productivity in rural area leading to greater demand for financial services (Chattopadyaya, 2011). Another study (Rather et.al, 2012) conducted in India points out lack of infrastructural facilities leads to poor linkage with markets. This in turn results in inaccessibility to financial services in low-income states such as Madhya Pradesh. The lack of financial infrastructure can be compensated with the help of technology adoption in banking. Technology adoption is important in banking sector due to several reasons. It keeps the banking activities efficient and cost effective. To maintain a competitive edge, technology in banking is inevitable. It also helps the banks in maintaining customer data, easy online financial services, anytime anywhere service delivery, dissemination of information about new banking products, customized products and financial products in local language (Prabha et.al, 2013). By using forms of technology such as mobile banking, cards, net banking etc, it is easy to record the transactions electronically and to identify the customers (Handoo, 2010). Since technology banking can make retail transactions easier, faster and cheaper for both banks and small customers, it helps in further financial inclusion (Thorat, 2008; Gupta, 2011). Technology banking instruments such as mobile banking have made the transactions cheaper and electronically transferrable (Raghuram Rajan Committee

Report, 2008). It is revealed in a study on factors that influence the introduction of mobile banking in South Africa, that, perceived ease of use, perceived usefulness, perceived cost and customer trust are the influential factors (Ismaile et.al, 2011). One of the ground breaking technological innovations in banking was the introduction of core banking solutions. It helps in branch networking, while other technology banking instruments such as ATMs connects people to bank (Gupta, 2011).

‘Bank on wheels’ is another approach which is found to be successful in Kenya. In this approach, a bank in vehicle travels in areas without a bank branch so that people can make transactions without visiting a physical bank branch (Dupas et.al, 2012). The Reserve Bank of India has introduced Business Correspondence Model (BCs) to enhance financial inclusion. This has revolutionized the Indian banking sector (Thorat, 2010). The BC model was launched in 2006, to enable branchless banking and realize the goal of financial inclusion. This could take banking services to the door step of customers in far reaching areas (Sarath et.al, 2010). Banks can indulge in tie-up with post offices, super markets etc to be the agents of banks. By using BC model, initiatives can be taken for opening of accounts for customers making sure that bank directly heads the responsibility for fulfilling KYC norms. BCs can also be used for creating awareness regarding savings, bank products, advice on money management and debt management in rural area (Oxford Policy Management Ltd, 2011). Even though BC model has been considered as a feasible option, there are many problems associated with the same. It lacks commercial viability and affects direct customer relations with the banks. The BCs are selected through a bidding system and they might lack financial literacy and banking knowledge (Prabha et.al, 2013).

To solve the problems certain measures can be taken. The selection process of BCs can be made stricter by including a review, investments for promoting financial literacy among BCs and mean while alternate channels such as mobile banking, ATMs have to be developed. Initially, BC model doesn’t include any service charge has been imposed on customers by BCs and banks, so that more will come to serve as Business Correspondents. Studies conducted in Brazil, Kenya and Peru established that BC model improves accessibility, provide appropriate financial products and is cheaper respectively. Banks can also take steps to collect feedback from customers regarding the services rendered by BCs (Oxford Policy Management, 2011).

VIII. APPLICATION OF TECHNOLOGY ACCEPTANCE MODEL (TAM) IN TECHNOLOGY BANKING

One of the most popular models used for explaining acceptance of technology is Technology Acceptance Model propounded by Fred Davis (1989). Many studies have emerged out suggesting modifications to the original Technology Acceptance Model. According to the model perceived usefulness and perceived ease of use are the two attributes that determine an individual’s attitude towards the use of technology (Davis et.al, 1989). The model has been applied in numerous studies on online consumer behavior (Venkitesh et.al, 2000; Bruner et.al, 2005). Researchers (Venkatesh, 2000; Brown, 2001) have also identified that the two belief variables, that is, perceived usefulness and perceived ease of use are influenced by external variables. Other factors which affect the acceptance of technology are complexity and relative advantage (Rogers, 1995).

The demographic variables such as age, income, education, gender etc also plays an important role in technology acceptance by individuals. Older persons experience a reduction in their own cognitive capabilities to understand and learn, thus finding it difficult to use latest technology such as internet (Heetzog et.al, 2000). The amount of knowledge possessed by a person often influences his/her usage of technology. Those with higher levels of education easily understand and use complex technologies like internet compared to less qualified ones (Rogers, 1995). Empirical studies (Agarwal et.al, 1999) are available indicating the positive relation between educational qualification and perceived ease of use. Also the members of higher socio-economic status due to lack of cross-group communication (Kelley, 1952). It is seen that individuals belonging to lower socio-economic strata uses each other's information sources to know the usefulness of the technological innovations.

It was found that access barriers such as cost could influence the use of technology (Mathieson, 1991; Venkitesh et.al, 2001; Hoffman et.al, 2000). Perceptions about the financial investment required in using technology such as interest charges, devices etc can hinder the individuals from using them. This serves as a disincentive for lower income groups to use technology (Taglang, 2000). They also have less exposure to technologies and may confuse about the desirability of technologies (Stanley, 2003). The older persons also find less usefulness with technology such as internet as the person grows older, they would like to satisfy their emotional needs rather than informational needs (Carstensen, 1995). There is also a tendency for older individuals to decrease their social network and may confine to their close circles, leading to less information on technology (Charles et.al, 1999). A study conducted to know the influence of age, income, education and race on internet usage states that perceptions on the usefulness and easiness of internet vary across these groups and it determines the consumer attitude towards using internet. The influence of perceived usefulness and perceived ease of use determines the attitude towards usage of internet (Porter et.al, 2006).

Researchers (Suh et.al, 2002) have come up with modifications for Technology Acceptance Model. One such added element to the Technology Acceptance Model is 'trust'. Another model was developed on the basis of TAM known as Online Shopping Acceptance Model (OSAM) which has been used for analyzing shopping behavior of the customers (Zhou et.al, 2007). To the study the acceptance of e-commerce both trust and perceived risk were added to already existing Technology Acceptance Model (Pavlou, 2003). The study on the acceptance of online banking in Finland, revealed that together with perceived usefulness, information related to online banking is significant for customers to accept it (Pikkarainen et.al, 2004). A study on adoption of electronic services explains, acceptance pattern of internet self efficacy determines its adoption (Hsu et.al, 2001). Another study on mobile banking acceptance points out that perceived usefulness is the strongest factor that determines its acceptance (Ervasthi et.al, 2010). Also, we can find modifications of Technology Acceptance Model with security concern as a factor (Muller, 2009). Another model which combines Technology Acceptance Model and Theory of Planned Action is also available (Taylor et.al, 1995). The element of compatibility has been added to TAM in certain studies (Agarwal et.al, 1998). In a study regarding World Wide Web, a new factor called 'playfulness' was used (Moon et.al, 2001). Voluntariness is another factor which was added to Technology Acceptance Model as a factor influencing the intention to use technology (Sun et.al, 2003). Technology Acceptance model is widely used in studying information

technology and its acceptance. Undeniably, it helps in providing insights in to the customer behavior towards information technology-based services, especially technology banking.

Thus undoubtedly, technology helps in the invention of more flexible and user-friendly services (Dixit et.al, 2010). Also branchless banking has a great potential to reach poor people who cannot be reached by way of traditional bank branch system (Vatuary et.al, 2008).

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