Chapter-2
CONCEPTUAL BACKGROUND AND LITERATURE REVIEW

2.1. INTRODUCTION

This study is an effort to understand inclusive banking opportunities available for the bankers to provide accessibility to visually impaired customers. The assessment on acceptance of new technology is done using a model. The previous chapter provided a basic understanding of the research area and the research design to be used. This chapter will focus on providing the conceptual background to the study and a comprehensive review that includes research papers, reports and policy directives relating to inclusive banking and Mobile banking acceptance. This review will play a vital role in determining the key constructs required for designing the research instrument as well as setting up research hypotheses.

2.2. UNDERSTANDING INCLUSIVE BANKING

Around half the Indian population is still either without bank account or lack accessibility to the banking services (KPMG, 2010). Large number of people living in the rural and interior parts of India are still part of under banked or unbanked clusters. Some of the main factors that have kept these people away from banking services are irregular income pattern, lengthy and complicated process for consuming loans and opening of bank accounts, lack of proximity to banking institutions, high transportation cost and loss of daily wage (Gauba, 2012). A World Bank Survey highlighted that one third of the adults in India owned account with an organised banking institution (Kunt&Klapper, 2012). This indicates both concern as well as opportunity to banks. Besides, the Government of India has also undertaken recent initiatives to take banking to the Indian population through ‘Pradhan Mantri Jan-DhanYojana’ (PMJDY), a mass Financial Inclusion tool to ensure access to financial services, namely, Banking/ Savings and Deposit Accounts. PMJDY accounts are being opened with Zero balance. However, if the account-holder wishes to get cheque book, he/she will have to fulfil minimum balance criteria.
Inclusive banking is a tool devised by the Reserve Bank of India (RBI) to ensure inclusion of unbanked people among the Indian population into the banking system. Inclusive banking is commonly understood as the efforts and initiatives taken by the banks to include the people who are under-banking as well as unbanked people. The RBI defines inclusive banking as “delivery of banking services at an affordable cost to the vast sections of disadvantaged and low income groups” (Nayak et al., 2010). The definition talks about including the financially excluded people into banking. Financially excluded here denotes the households which are deprived of credits and loans in spite of their demand. Inclusive banking came into the strategy boards of the banks in the year 2006 through the insistence of and initiation by RBI. Although credit is a major component in inclusive banking, inclusiveness covers a wide range of other services such as savings, insuring, and ease of operating the banking accounts as well as accessibility facilities offered by the formal financial system to those who tend to be excluded to ensure that they would enjoy independent banking facilitates (Nayak et al., 2010).

The motive behind the development of inclusive banking initiative is not only delivering banking services to people who are unbanked, it is also meant for ensuring comprehensive accessibility of banking services to everybody at lower cost or no cost. The inclusive banking initiatives not only address the people who live in remote places or villages, it also concentrates on people with disability by increasing the accessibility of the banking channels to ensure that they consume banking service like normal persons do.

Some of the major inclusive banking tools (RBI, 2008) that are focusing on including the excluded people are,

- Offering no-frills accounts to lower income or no income people
- ‘Know Your Customer’ (KYC) norms are not mandatory
- Agent banking or Business correspondents (BCs)
- Use of technology: Mobile banking, ATM kiosks centre, Internet banking and so on
- GCC (General Credit Cards) and KCC (Kisan Credit Cards) offered to farmers and villagers
- Operating Micro branch in the unbanked rural regions
o Simplifying the branch authorization of such smaller branches
o White label ATMs: These are ATMs installed by non-banking private cash
merchandisers, which can be accessed by customers with ATM/Debit/Credit
cards from any banks.
o Savings account with overdraft facility, and recurring or fixed deposit feature

2.3. VISUALLY IMPAIRED PEOPLE AND BANKING SERVICES

This section will aid in understanding various levels of visual impairment,
inclusive banking initiatives of RBI and the difficulties faced by the visually
impaired customers while consuming banking services.

2.3.1. Understanding visual impairment

Under the PWD (Person with Disability) Act, a 'person with disability' has
been defined as any person having 40 percent or more of any of the following
disabilities: (i) Blindness; (ii) Low vision; (iii) Leprosy cured; (iv) Hearing
impairment; (v) Locomotors disability; (vi) Mental retardation; and (vii) Mental
illness. This is a limited definition, as only persons who fall within this definition as
having 40 percent or more of the above seven disabilities would be categorized as
persons with disabilities (PWD Act, 1996).

The PWD act (1996) categorises visual impairment into two: Blindness and
low vision. It defines person with low vision as “a person with impairment of visual
functioning even after treatment or standard refractive correction but who uses or is
potentially capable of using vision for the planning or execution of a task with
appropriate assistive device”. PWD Act (1996) notes blindness as a condition where
a person has “Total absence of sight; or visual acuity not exceeding 6/160 or 20/1200
in the better eye with correcting lenses; or limitation of the field of vision subtending
an angle of 20 degree or worse”. National Dissemination Center for Children
with Disabilities, in its disability Fact Sheet, notes that visual impairment means
“impairment in vision that, even with correction, adversely affects a child’s
educational performance. The term includes both partial sight and blindness”
(NICHCY, 2012)
World Health Organization (WHO), in its fact sheet, classifies visual disability into three: Moderate impairment, severe impairment and blindness (WHO, 2014). It defines low vision as a “moderate visual impairment combined with severe visual impairment: low vision taken together with blindness represents all visual impairment”. WHO fact sheet (2012) clarifies that “20/200 to 20/400 is considered severe visual impairment or severe low vision”. The people with severe impairment level with 80-90% deficiency and the blind people are those who suffer in many aspects as they will not be able to view anything.

Blindness is considered to be a progressive deficiency; therefore people with severe impairment (only 10-20 percent vision) might develop blindness in due course of time (Kumar & Anandkumar, 2013).

2.3.2. Visually impaired people in India

Around 30 percent of the World’s blind population live in India (WHO, 2012). It highlights the market size and potential of this special segment to consume banking services. India is one of the member countries to the United Nations (UN) Convention that agrees and insists upon the rights of people with impairment and disability, and has a compulsion to support and offer equal opportunities and facilities to all, in spite of their impairment or disabilities they might suffer from. This arrangement is committed to guarantee the right to equality and the right to life, which are enshrined in the Fundamental Rights in the Constitution of India (Maheshwari, 2012).

2.3.3. Inclusive banking for Visually Impaired Customers (VICs)

Visual impairment has restricted or limited the VICs from consuming the banking service like normal persons. Banking services was a great challenge for both consumers to access as well as the bankers to offer. The channels and the features offered to the normal person might not the suit the visually impaired customers to access. The normal branch banking services or the ATM machines did not help the visually impaired customers to access independently. Besides, many
banks have even declined offering banking services to these people citing risk and disability as the reason.

There was a general lack of infrastructure and awareness in India that limits people with disabilities to use banking services. This translates to problems not just in accessing a physical bank and seeking help from a bank official, but also extends to accessing services such as ATM machines and online banking options. The early 21st century saw banks offering some disabled-friendly banking options in the urban markets, but in the rural areas, there was no banking infrastructure or facilities that could help the visually impaired to bank (Maheshwari, 2012). With the visually impaired people growing in confidence and improving their ability to access the current technologies like any other normal person, the RBI offered special guidelines to its member banks to offer comprehensive banking service and accessibility to the banking features and channels.

RBI Circular (2008) notified on including the visually impaired people in the banking services. It compelled the banks to offer banking facilities (offering cheque book, ATM facility, locker provision and so on) to the visually impaired customers as they have lawful right to contract with the banks as customer. The following were the highlights of RBI circular comprising notifications to the banks:

- The banks should ensure offering all the banking features and facilities that include third party cheques, ATM facility, Internet banking provision, locker option, and retail credit options that include offering credit card facilities.
- Insisted that the banks cannot reject or neglect visually impaired people into banking services stating risk in operating or security concern over using the facility.
- The banks were advised to instruct their branches to provide all possible assistance to the visually impaired for availing the various banking facilities.

Apart from the above notifications, the RBI (2008) circular also notes directions with special reference to the availability and accessibility of ATM machines to visually impaired customers. Below mentioned are the special directions to the banks relating to ATM machines:
- **Ramp provisions to ATMs**: Banks were instructed to take adequate measures to build and make ramps to support visually impaired people to access ATMs without difficulty. The direction were not only noting the ramp provision to the existing ATMs, but also pertaining to the ATMs to be installed in the coming days. Such provisions were insisted by RBI so that the wheelchair users or persons with disabilities can also use ramp facility with suitable height and slope to ensure easy access to ATMs.

- **Ramps provision at the entrance of the banks and its branches**: Banks to take appropriate steps including providing ramps at the entrance of the bank branches so that the persons with disabilities or wheelchair users can enter the bank branches and conduct business without much difficulty.

- **Availability of Accessible ATMs**: Every Bank should make at least one third of new ATMs that has talking features apart from Braille keypads. Also make sure that the special accessibility provisions such as Braille key pads and talking speakers are placed in the appropriate place and position that will ensure and support the accessibility to customers with disability and impairment.

- **Information about ATMs**: The RBI notifications also directed the banks to make sure that the visually impaired customers are aware of the locations as well as the availability of ATMs with special provisions. Banks are insisted to make the disabled customers aware of the availability of the ATMs with Braille as well as the talking provisions and also notify to them the location of these special ATMs.

### 2.3.4. Inconvenience faced by VICs while banking

In spite of all technological support, special arrangements and guidelines of RBI, the visually impaired customers do face inconveniences while banking. Below mentioned are some of the issues and concerns faced by the VICs while banking, as identified by Maheshwari (2012) in her research.

1. **Difficulty in reaching the bank or accessing the entrance**: She noted that VICs find it complicated to find the way and even reach their home branch. There are banks that are still without ramp facility or a ramp facility that cannot be used. Many banks do not have a clear entrance with highlighted sign boards that can the
partially impaired to identify. Even with ramp facilities, the VICs cannot reach their banks without help and that hinders the freedom of VICs to bank freely.

b) Difficulty in understanding or accessing the terms and conditions: VICs also face difficulty in knowing the terms and conditions of various features and services of the bankers. They are not aware of terms and conditions as there is no provision for knowing the terms and conditions printed in small fonts at the end of the bank applications banks. The banks hardly take special efforts to educate or at least read those exhaustive lists of terms and conditions, which keep the VICs unaware of the information relating to the banking products consumed. Some of the terms and conditions are also hard to grasp, because the language used to explain the banking features or services and their procedures is puzzling and difficult. Normally, an application containing exhaustive list of the terms and conditions at the back are provided to them, without any thought about the readability or how the visually impaired person will be able to read and understand the list of terms of conditions.

c) Difficulty in tracing the details in the financial instruments: The VICs also find it difficult to differentiate and identify details and information printed on the various financial instruments like cheques, deposit certificates, savings certificates and so on. These financial instruments offered by banks do not carry any symbol or impressions that can be felt or read by the VICs. It may be noted that the Indian currency notes have impressions which make it easy for the visually impaired to distinguish between currency denominations.

d) Accessibility of ATMs: Not all ATMs include Braille keypad. Besides, locating ATMs with such facilities is a real challenge for the VICs. The awareness level about the ATM machine with special accessibility features to VICs are very low among these customers, and also the location of such machines might not favour if it is installed only in the urban areas as a large number of visually impaired people live in rural areas. One of the major problems with ATMs with Braille keypad and talking features is, the VICs still need to choose options present in the touch screen which cannot be accessed or viewed by the visually impaired customers; by any means they require the support of another person to operate ATM. A major problem in using ATM has always been the display and touch screen options, as well as the
directions on how to continue with a banking transaction; these machines are not competent enough to communicate with VICs. Another limitation with ATMs in India is that they are never equipped with an audio jack that can be inserted and used, which makes it difficult for those VICs who want to connect headphones and hear the display on the screen, in case they do not carry one.

e) **Signature mismatch**: VICs often find it difficult to have a consistent signature. The banks have reported signature mismatch in many VICs, as they find it difficult to sign the same way every time. There is also a concern on signature mismatches due to difference in the signature at the time of opening the account and signing of cheques in due course of time. At present the bankers do not have a solution that will help or distinguish the financial instruments signed and drawn by the VICs that can be dealt by a separate procedure to ensure smooth process of transaction. Though salaried VICs may not commonly use cheque facilities as they can transact through ATMs and other channels, the self employed or VICs running a small business may have to rely on cheque transactions. Therefore it has become critical for bankers to create or design a cheque facilitation process that will deal with the cheques drawn by the VICs separately to ensure smooth operation.

f) **Operational difficulty of electronic channels**: The computer based electronic channels are not very convenient for the VICs to use, as not all bank websites are provisioned with magnifying options and audio reading options. Both ATMs as well as the computer based Internet banking require screen reading software to access the banking service features. Unfortunately not all the VICs are literate enough to understand the English readings of the electronic channels (especially, online banking) and also the accent used in reading software is quite difficult to grasp unless one is fluent enough in English language. Another difficulty is, all the visually impaired customers, even the ones with low vision, are viewed as blind. Blind persons rely on Braille keypad as they cannot view or read from the screen. However, the low vision customers can still read provided the screen is designed with the features that will enable low vision to read easily. The screens need to have darker and larger font size, suitable styling and colours for words and pictures to ensure accessibility of websites by low vision customers. Several websites have an online safety measure where the customers may have to key in
‘Completely Automated Public Turing test to tell Computers and Humans Apart’ (CAPTCHA) codes to authenticate the customer’s transaction or to register for a specific service; using these CAPTCHA security codes can be impossible or complicated for VICs (Tom, 2010).

2.4. ELECTRONIC BANKING

Electronic banking emerged in India after service liberalisation, as foreign players brought in their technology and innovative processes into the Indian market to capitalise on the huge market. Through Information Technology and Communication systems, the banks were able to design an electronic based service delivery platform that can cater to a larger population efficiently. Electronic banking is not just about banking using the Internet; it can be through any electronic mode right from television to telephone (Daniel, 1999). Internet or online banking is one of the delivery platforms of the electronic banking.

Figure 2.1.Electronic banking delivery platform

<table>
<thead>
<tr>
<th>Managed Network</th>
<th>Via Television Cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>The banker will utilise the online services of the different client to provide banking information</td>
<td>Using the satellite cable network to send the banking information to the customer through TV screen</td>
</tr>
<tr>
<td>Computer based banking through private dialup</td>
<td></td>
</tr>
<tr>
<td>Customer uses the client owned software on computer to access the bank account via model directly connected to bank</td>
<td></td>
</tr>
<tr>
<td>Computer based Internet Banking</td>
<td>Banking through mobile phones</td>
</tr>
<tr>
<td>Banking through Internet connection using computer to access the banks website with the help of user id and password</td>
<td>Customers access the bank account information and transact through mobile phone</td>
</tr>
<tr>
<td>Tele-banking</td>
<td></td>
</tr>
<tr>
<td>The banker provide information and services through call centre that can accessed by customers through telephone using user Id and tele password</td>
<td></td>
</tr>
</tbody>
</table>

Source: Adopted from Karjaluato (2003)
Figure 2.1 shows the different delivery platforms through which electronic banking can be accessed by the customers. The banks use these delivery channels not only for providing information but also to help customers to transact or access transaction details. In a developing country like India, the customers are fast adapting to the electronic banking channel for their banking needs. Unlike developed countries, the Indian market has witnessed higher usage of Internet banking platform and Mobile banking platform when compared to other electronic banking modes, which makes people to perceive Internet banking and electronic banking as the same.

2.5. MOBILE BANKING

The Federal Reserve System (2012) defines Mobile banking as “using a Mobile phone to access your bank account, credit card account, or other financial account. Mobile banking can be done either by accessing your bank’s web page through the web browser on your Mobile phone, via text messaging, or by using an application downloaded to your Mobile phone”. According to Tiwary&Buse (2007), Mobile banking includes performing banking transactions, transacting in stock market, administering the accounts and to access customised information.

Mobile (also known as M-Banking or m-banking) is a term used for performing balance checks, account transaction, payment and so on via Mobile phone. Mobile banking today is most often performed via Short Message Service (SMS) or the Mobile Internet but can also use special programs downloaded to the Mobile device. Mobile banking remains as a provision available for performing banking operations and transactions using the Mobile phone.

2.5.1. Forms of Mobile banking

Mobile banking across the world comes in different forms. It is to be noted that not all countries adopt all forms of Mobile banking. The preference for Mobile banking form differs from country to country depending on the reach and level of Mobile phone technology. The Mobile forms that are practised and offered in the
Indian market are SMS-based banking, Web browser-based banking Application-based banking and SIM-based.

a) SMS-based Mobile banking form: SMS-based banking was the first Mobile banking form introduced in India. Mobile phone usage increased at a rapid pace compared to computers in India as a result of which the banks started working on strategies through which they can capitalise on the Mobile phone usage. At first, Mobile banking was introduced through SMS apart from Interactive Voice Response System (IVRS) -based call response. SMS banking was fundamentally brought in to keep the customer informed about their operations and banking particulars and not for transacting. But with the emergence of smart phone and higher technology solutions in the Indian market, the banks designed interactive response model of banking though which the customers can interact with the bank through SMS. This form of banking is very useful for the customers to inquire all the details as well as post requests on the banking features and services. Currently SMS-based Mobile banking form can help customers to do balance enquiry, bank statement, fund transfer details, cheque book request, cheque stop request, fund transfer and so on. SMS-based is considered to be the most convenient and risk free form of Mobile banking as it is easy to interact and does not involve application or software conditions to operate (Kumar, 2009).

b). Web browser-based Mobile banking form: It generates a user’s interface on the server and transports it subsequently to the Mobile device. Primary examples of browser-based banking applications are services based on Wireless Application Protocol (WAP) and i-mode (a packet-based service for Mobile phones). Browser-based applications are hence suitable for Mobile devices with low memory or processing power such as Mobile phones (Dilg et al., 2004). Secondly, the user does not need to be technology savvy to install software on his/her Mobile device. Finally, the predefined user interface simplifies the interaction with the application and encourages the user to shed his/her inhibitions. This form is just similar to computer based Internet or electronic banking, where a customer logs into the banks website using Internet via computers and performs all queries and transactions. Mobile phones that have provision for Internet activities and web browsing provisions are the most suitable devices through which a customer can get into a
bank site using Mobile Internet to conduct banking activities as it is done in the computer Internet browsing. This form is not very common and receptive as the emergence of clients’ application-based banking offers more control and ease to access the bank accounts (Kumar, 2009).

c). SIM-based Mobile banking form: The SIM Toolkit standard, known as STK was developed in 1996 by the European Telecommunications Standard Institute (ETSI) and Special Mobile Group (SMG) as a specification for value-added services in Mobile commerce. It works with GSM-compatible devices (Bardet, 2002). The STK can be programmed into the SIM card of a Mobile phone thereby enabling it to manage the user interface of the handset. A Mobile banking STK application can be thus installed along with utilities for encryption and digital signatures on a Mobile handset. This application is then run in a user-friendly way via menus. When the user wishes to interact with his/her bank, for instance to enquire the current status of his/her bank account, he may navigate through the menu and enter the required data in corresponding fields. This application works in analogy to SMS Banking. The difference is that the user does not have to learn or type transaction commands. The STK acts as interpreter between the user and the bank. The SIM based banking is not common in India (Kumar, 2009).

d). Client application -based Mobile banking form: Client-based Mobile banking applications are those which require software to be installed on the Mobile device. Transactions can be prepared offline (such as entry of necessary details). Once all necessary data have been keyed in, a connection to the server is established and the data transmitted. Before the data is transmitted, a security check takes place by means of Personal Identification Number (PIN) and Transaction Authentication Number (TAN). This reduces the probability of typing errors getting transmitted thereby helping Mobile banking win greater acceptability. Enhanced security is another advantage of client-based applications. Since the device goes online only for a short period, there is little threat of some waiting hacker to attempt to break into the connection. In order to install and run a Mobile banking client on the Mobile device, two primary prerequisites must be fulfilled:

i. The Mobile device must have sufficient memory and processing power to run the necessary software.
ii. The software must be especially designed to cope

The Mobile banking forms may also depend on the level of acceptance by the customers. The acceptance of a particular form of Mobile banking might rest on various factors. Though the purpose of each of the forms are to help the customer to perform banking operations or transactions, they have different ways of operations as well as unique characteristics that offer both advantages as well as disadvantages to different customers.

2.5.2. Levels of Mobile banking

Mobile banking can be operated or utilised at different levels. Though Mobile banking can be utilised for banking services that range from basic queries to conducting transactions, the customers may want to operate at different levels. Mobile banking levels explain the extent to which the customer can choose to use Mobile phone for performing his/her financial transaction and banking operations. The usage of Mobile phone for banking may vary from customer to customer depending on his/her interest, knowledge and understanding. Therefore it is a customer’s choice to decide if he/she wants to use Mobile phone for just getting information about his/her bank accounts and transaction or even willing to perform financial transactions as well transfer funds. The decision of the customer to decide on the extent to which Mobile banking can be done rests on the perception of the customer in terms of risk, time and cost. Kumar & Anand Kumar (2013) have suggested three different levels at which the banking services are consumed or operated using Mobile phones. They depicted three levels rooted in extended model for Internet commerce (EMICA developed by Burgess & Cooper, 2000) to identify the extent of Mobile banking operations. Information level, interaction level and transaction level are the three levels at which Mobile banking operations are performed.

a) Information level: Receiving mere information about their banking transactions does not involve customer interaction. This is a case of information level of Mobile banking. Sending SMS on the transaction done using debit card or online transaction is mandatory. Every customer receives an SMS every time they withdraw or deposit cash in their account for confirmation and information to the
customers. Many customers just receive such information and do not prefer using a query method where information can be acquired sending a text code to the bank. Just receiving account information from bank through SMS is commonly understood as information level of Mobile banking form. This form is a one way communication where the banks send automated SMS consisting information about each every transactions and cash activity. This is a fundamental level of Mobile banking which is very common among every customer owning a bank account. Information received from the bank operating in India at this level are listed below (Kumar, 2009)

- One time password (OTP) for online transactions with the amount requested as well as the details of the merchandiser.
- Transaction reference number with details of amount spent and the merchandiser name during both online and physical shopping.
- Information about account balance after cash deposit as well as withdrawal done in both ATM as well as Bank branch with the date and time of activity, and channel details
- Reminder on authorised debits to be made along with amount and date
- Security policy information to protect the customers from the cyber crimes and fake request of account details such as PIN, date of birth, account number and so on.
- Reminder and information about auto debit initiation on bill payments
- Mini statement of the credit card with the details on last four digits of the card, minimum payment due, total payment due and the payment due date
- Confirmation of receipt of credit card payment with amount received, mode of payment, date and time of receipt of payment
- Reporting insufficiency of fund to clear cheque or payment

The banks send information through SMS which makes it easy to access and read for anybody to receive, irrespective of the model of handsets used by the customers. The above listed information from the banker is received only if the registered Mobile number is provided by the customer to the bank. The customers have to register change of Mobile number with the bank in case the Mobile number is changed to ensure receiving all these information. This fundamental information
level of Mobile banking usage does not incur any cost to the customer as it is not chargeable (Kumar, 2009).

b) Interaction level: This level not only lets the customers to receive standard automated SMS information about their banking activities and transactions, but also allows them to make query or request information on their bank accounts and features. The customers can make requests and queries to their bankers using the SMS-based banking provisions that provide a standard SMS code or text formats to get information anytime, anywhere from the registered Mobile number of the customer. The interactive level can be performed through any form of Mobile banking discussed in the previous section. Apart from viewing information regarding the bank account through bank app or web using a Mobile phone, the customer can also give standing instructions, modify or change the personal information. Unlike the information level of usage, the customer needs to register for Mobile banking option with the banker to use Mobile banking at interactive level. Though bankers offer such facilities on non-chargeable basis while opening up the account, after six months or a year, charges are levied by the bank from then on. But RBI (2008) has been initiating to make these features on non-chargeable basis especially in the rural areas and interior villages to include the unbanked and under-banked. The interactive level Mobile banking in India is also available in regional languages as an inclusive banking strategy that provides accessibility to customers with less proficiency in English as in those with lower education and in rural areas (Kumar, 2009).

Interactive level involves access to wide range of information relating to the bank and the account. At interactive level, the customer views, requests and instructs banker apart from receiving standard automated SMS that are discussed in the information level Mobile banking.

Interactive level of Mobile banking involves the following activities:

- Balance enquiry on both credit card and bank accounts that include savings, salary, and current account.

- Requesting mini statement of both bank accounts as well as credit card accounts.
- Statement of consumer credit like housing loan, autoMobile loan, personal loan, consumer loan, professional loan, education loan and so on
- Requesting new PIN for ATM, debit card or credit cards.
- Reporting lost credit card, debit card and ATM cards
- De-activating bank cards including credit card, ATM card and debit card
- Enquiry on the international currency rates
- Status and statement of the fixed deposit and recurring deposits.
- Requesting new cheque books
- Downloading statement by logging in electronic banking option using web browsing option in Mobile phones
- Change of contact details like address, Mobile and email address, which take effect after authorisation by the banker
- Updating the customer information (Adhaar card number, PAN card number, and so on)
- Locating ATMs and Bank branches
- Information on customer loyalty points
- Payment refund status

c) Transaction level: There are customers who prefer not just receive information or request information, but also like to use Mobile as a banking service channel that will help them transact using these services. The customers transact using Mobile banking features to save time and effort as it can be done on the move. This level of transaction is also done through all the three forms of Mobile banking, but application-based as well as the web browsing form are most common and comfortable when compared to the SMS-based Mobile banking. Customers using smart phones form the core segment group that use transaction level Mobile banking as it easy to use. The customers living in the urban areas and youth are used to transaction level while the rural market still shows aversion to use Mobile banking at higher levels due to security concerns. The customers at transaction level not only receive, or request information but also transact (Kumar, 2009). The higher level of Mobile banking is done using application-based and browser as the SMS-based Mobile banking is very basic and does not have provisions that allow transactions.
The banking services and features that can be accessed at the transaction level of Mobile banking in India are listed below:

- Electronic fund transfer: Transfer fund to account with the same or different banker.
- Booking railway tickets.
- Recharge prepaid Mobile connection, direct-to-home (DTH) dish Television connections.
- Redeem reward points
- Electronic payments to online shopping
- Requesting loan
- Opening term deposits
- Convert transactions into EMI (equated monthly instalments)
- Bill payments for utility services like electricity, post-paid Mobile or telephone connections and insurance premiums
- Payment towards credit cards outstanding
- Auto debit instructions for the bills

### 2.5.3. Functionalities of Mobile banking channel

There are wide ranges of functions that can be performed through Mobile banking channel. Though Mobile banking can be used for a wide range of banking service consumptions, the customers might not use all of them and the banking consumptions through Mobile functionalities may depend on the interest of the customers. The previous section explained the levels of Mobile banking, highlighting some of the banking services consumed through Mobile phones. Table 2.1 depicts detailed list of functions that can be performed through Mobile banking.

The functionalities depicted in Table 2.1 are features and service provisions offered through Mobile banking across the world. Bank customers in the developed countries with good technology and higher standard of living experience most of the Mobile banking functionalities listed in this table. Not all of these functions are practiced or offered in India due to lower literacy rate that prevails among the large sections of Indian population in the rural areas.
Table 2.1. Functionalities of Mobile banking

<table>
<thead>
<tr>
<th>Services</th>
<th>Functionalities of Mobile banking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information services</td>
<td>View account balance</td>
</tr>
<tr>
<td></td>
<td>M-statement</td>
</tr>
<tr>
<td></td>
<td>Transaction history</td>
</tr>
<tr>
<td></td>
<td>360 degree view of the account (savings, deposits, loans, credit card, mutual fund, stocks, insurance)</td>
</tr>
<tr>
<td>Account opening</td>
<td>Opening up of account with digital signatures</td>
</tr>
<tr>
<td>Money movement</td>
<td>Money transfer options</td>
</tr>
<tr>
<td></td>
<td>Transfer within same bank within country</td>
</tr>
<tr>
<td></td>
<td>Transfer within same bank across globe</td>
</tr>
<tr>
<td></td>
<td>Transfer to other banks within country, region and globe (limited reach for many banks)</td>
</tr>
<tr>
<td>Servicing and support</td>
<td>Balance alerts, payment alerts, Transaction alerts, profile-based alerts, service-based alerts, research alerts for niche customers and so on</td>
</tr>
<tr>
<td></td>
<td>Profile-driven changes (address, phone number)</td>
</tr>
<tr>
<td></td>
<td>Back office driven support (stop payment, cheque book request and so on)</td>
</tr>
<tr>
<td>Adopting Multiple line of business</td>
<td>Moving Mobile banking to non-banking products such as bank assurance (that is, alliance between a bank and an insurance company)</td>
</tr>
<tr>
<td>Mobile-based, value-added transaction offerings</td>
<td>Various Mobile-based, value-added offerings such as stock trading and MBPP (Mobile Bill Presentment and Payment)</td>
</tr>
<tr>
<td>Proximity Payments</td>
<td>Use of Mobile at Point of Sale (POS) and ATM</td>
</tr>
<tr>
<td></td>
<td>To initiate transaction requests and communicate with bank to solicit transaction authorization</td>
</tr>
<tr>
<td></td>
<td>To pay for goods at store</td>
</tr>
<tr>
<td></td>
<td>To make withdrawals in specific shops and shopping malls</td>
</tr>
<tr>
<td>Remote Payments</td>
<td>Digital downloads with limited streams such as Gaming and phone top-ups</td>
</tr>
<tr>
<td>Featured Phone driven Capabilities</td>
<td>Scheduling based on calendar incorporated with Banking transactions Calculators ATM / Branch Locators</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Technology-led value-added facilitation</td>
<td>Remote Mobile deposit Check image view</td>
</tr>
<tr>
<td>Relationship driven enrichments</td>
<td>Cross-selling banners Behaviour-based messaging Loyalty coupons General customer communication Event-driven customer communication Profile-driven customer communication</td>
</tr>
<tr>
<td>Money Management and personal finance</td>
<td>Personal Financial Management (PFM) Portfolio management Account aggregation</td>
</tr>
<tr>
<td>Corporate / commercial banking specific</td>
<td>Payroll driven services Document workflow based remote approvals Comprehensive Small and Medium Business kit from e-invoicing, accounting, reporting, communicating with extensive supply chain incorporation.</td>
</tr>
<tr>
<td>Other Mobile Banking services</td>
<td>Ticketing for events and transportation Car Park tickets Bill payments (utility bills/ credit cards) Prepaid recharges (Mobile phones &amp; DTH)</td>
</tr>
</tbody>
</table>

Source: Vaidya (2011)

### 2.5.4. Benefits and impediments of Mobile banking

Mobile payments have been viewed as a time saving and convenient mechanism while providing the customers with higher accessibility to wide range of banking services or features that can be controlled easily (Javelin, 2011). Operating a bank in a country like India offers huge opportunities alongside great challenge of...
serving the diverse, large population with poor literacy. Mobile banking helps to simplify the banking solutions that can be consumed at home as the rural customers need not spend time, effort and money to travel all the way to a nearby town to transact.

Mobile banking is considered to be simple and easy when compared to the computer based electronic banking. Mobile banking is not only easy to access but also economical as figure 2.2 shows that cost incurred is the lowest when compared to other channels of banking. One of the major advantages gained through utilisation of Mobile telecommunication technology is low cost. Bankers aim at lowering the cost while increasing their efficiency to remain competent in the market. Mobile banking not only lowers cost to bankers, it also supports customers to incur no cost or lower cost to consume banking service when compared to other electronic channel options.

Figure 2.2. Different banking channels and the transaction costs involved

![Figure 2.2](image)

Source: KPMG (2011)

Despite these positive Mobile finance attributes and perceptions, consumers remain concerned about the security risks inherent in Mobile financial transactions (Javelin, 2011). In India with large rural customers, creating awareness as well as educating them on Mobile banking and its operations is a concern. Unless and until
the customers are educated or informed of the process and usage, Mobile banking is likely to see lower diffusion rate. Security concerns have posed a greater impediment to the bankers in India as customers are not only worried about cyber crimes and fraudulences, but also concerned about the consequences of incorrect operations.

2.5.5. Mobile banking as an inclusive banking tool

In India, Mobile banking is used as one of the major tools for including the unbanked population across the country. The RBI has made special guidelines and regulations that include Mobile banking as an inclusive banking tool that provides accessibility to banking features and services. Studies in America also highlight that the role of Mobile banking in including Peer-to-Peer (P2P) Payments to attract the younger generation, the un-banked and under-banked (Paisner, Castonguay & Collins 2009). The Federal Reserve System’s report (FRS, 2012) depicted that Mobile phone has larger potential to be used for covering the younger generation, minorities, and those with low levels of income groups that are prone to be unbanked or under-banked. Mobile banking has the potential to expand financial access to the unbanked and under-banked by reducing transaction costs and increasing the accessibility of financial products and services.

The fundamental role of the Mobile banking as an inclusive banking tool is to increase or provide accessibility to banking services that will reduce or solve the concerns of under-banked and not addressing the unbanked. Banks are concerned not only about including the rural market, but also the segment of people with disability. Another major role of Mobile banking is to include the disabled people by providing accessibility. Customers with hearing and visual impairment were facing huge problems and challenges to consume banking services through the traditional or other technology related banking channel. Mobile banking channel offers aid to people with disability as it is easy to access banking services through Mobile phones. With the technological transformation that has moved from computer to Mobile technology, Mobile banking has the potential to become a major channel for banking service consumption in India. Mobile banking is already seen as a tool for gaining competitive advantage and a source of increased efficiency for the bankers.
2.6. MODELS FOR ASSESSING NEW TECHNOLOGY ACCEPTANCE

Though technological expansion and developments have potential to make business processes more efficient and improve the business practices by creating innovative delivery systems, not all customers are keen to accept a new technology for numerous reasons.

Opening up of Indian market to foreign companies saw faster economic growth and industrial development with the help of newer foreign technology along with innovative business processes (Ohja, 2002). Both Indian as well as foreign players saw huge opportunities to develop and expand. The newer technologies and development of communication systems helped businesses to develop multiple delivery systems for the products to reach the customers. But alongside these newer technologies and systems, the greater challenge to customers was to learn and apply. Not all the customer segments would be willing to adopt and change to a newer system since a country like India has a highly fragmented population.

It is very important to know the importance of acceptance of newer technology or system for consuming services in India. As there are barriers or inhibitions to new technology acceptance in the initial stages, it becomes important for the researchers to develop a model to investigate and understand the factors affecting the acceptance of a new technology. Several researchers have developed models to assess technology acceptance and explain the dynamics of the interrelationship between the factors influencing the intention to use.

2.6.1. Theory of Reasoned Action (TRA)

TRA essentially argues that social behaviour is motivated by an individual’s attitude towards executing that behaviour. Therefore, the change of behaviour is a function of one’s beliefs about the outcomes of the behaviour and an evaluation of the value of each of those outcomes (Moon & Kim, 2001). According to Ajzen and Fishbein, (1980, p.5) “individuals are usually quite rational and make systematic use of information available to them. People consider the implications of their actual behaviours before they decide to engage or not engage in a given behavior”. Therefore they proposed TRA that notes individual beliefs as a factor influencing attitudes, and also signifies in creating intentions to generate behaviour.

Figure 2.3. Theory of Reasoned Action (TRA) model

The TRA model shown in Figure 2.3 outlines that the behaviour results from the formation of specific intentions to behave (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980). TRA depicts that two major factors determine behavioural intentions namely: the person’s attitude toward the behaviour and subjective norms. Attitude toward the behaviour refers to the person’s judgment that performing the behaviour is good or bad. The subjective norms reflect the person’s perception of social pressures put on him/her to perform or not to perform the behaviour in question. Thus, attitude is a function of beliefs that leads to certain behavioural outcomes. Moreover, subjective norms are a product of normative beliefs. Thus, the general subjective norm is considered to be predicted by the perceived expectation of definite individual referent or groups, and by the person’s motivation to observe with those expectations (Ramayah & Jantan, 2004).
Theory of Reasoned Action has been used by the researchers in the past to determine the performance of the behaviour and intention to use. TRA has been used for predicting turnover (Prestholdt et al., 1987); evaluating performance in education (Fredricks&Dossett, 1983); and also applied to examine the breast cancer (Timko, 1987). The TRA (Ajzen&Fishbein, 1980) has also been used for describing and envisaging numerous health-related behaviours that include breast-feeding (Manstead, Proffitt& Smart, 1983, Kloeben& Thompson, 1999). The literature suggests that TRA is not a common model for assessing Mobile banking acceptance.

2.6.2. Theory of Planned Behaviour (TPB)

Sheppard et al. (1988) believed that there are two important concerns existing in TRA. The first concern highlighted was about differentiating the difference between the intention and behaviour. It could be a problem as different variables along with the person’s intention to use decide the performance of the behaviour. And the second concern was that the theory lacks room for considering the chance of possibility for negative result because of a subject’s behaviour or due to subject’s intention to use. Therefore Ajzen (1985) tried to include an additional factor that will help in determining the intention and the behavioural aspects. To fill the gap that was seen in the TRA, Ajzen brought a model called Theory of Planned Behaviour (TPB) with an addition of perceived control over behaviour as a construct.

The above explanation clarifies that TPB is a mere expansion of TRA model. TPB comprises the construct, perceived behavioural control to determine and report for the degree to which customers have absolute control over their actions, that is, the extent to which the behaviour is truly at the discretion of the user. In TPB, behavioural control directly affects the intention to perform behaviour, and may directly affect behaviour in situations where the user intends to perform the behaviour, but is prevented from doing so (Ajzen, 1985). Perceived behavioural control relates to the extent to which the person believes that he/she has control over personal or external factors that may facilitate or constrain the behavioural performance (Ajzen, 1991). It is assumed to have direct effect on both behavioural intention and behaviour.
Figure 2.4. Theory of Planned Behaviour (TPB) model

As a general theory, TPB does not specify the particular beliefs that are associated with any particular behaviour, so determining those beliefs is left to the researcher’s preference. From figure 2.4 it is understood that TPB provides a robust theoretical basis for testing such a premise, along with a framework for testing whether attitudes are indeed related to intent to engage in a particular behaviour, which itself should be related to the actual behaviour. Finally, perceived behavioural control is informed by beliefs about the individual's possession of the opportunities and resources needed to engage in the behaviour (Azjen, 1991).

Both TRA and TPB depict behavioural intention as their key factor that predicts the actual behaviour of the subject. Both the models are designed with the fundamental belief that subjects are rationale and they make organised utilisation of information that is accessible while making their decision to use or accept. TPB has been used in many different studies in the information systems literature (Mathieson, 1991; Taylor & Todd, 1995; Harrison et al., 1997). TRA and TPB have also been the basis for several studies of Internet purchasing behaviour (Jarvenpaa & Todd, 1997a, b; Tan & Teo, 2000; Limayem et al, 2000; Song & Zahedi, 2001; George, 2002; Pavlou, 2002; Suh & Han, 2003; Khalifa & Limayen, 2003; Celik, 2008).

2.6.3. Social Cognitive Theory (SCT)

The Social Cognitive Theory (SCT) developed by Bandura (1986) states that a human behavioural outcome is distinctively determined by vibrant and reciprocal
interface of individual factors, behaviour, and the environment. Figure 2.5 suggests that it focuses on one or two constructs, such as self-efficacy, while ignoring the others. According to SCT, people develop perceptions about their own abilities and characteristics that subsequently guide their behaviour by determining what a person tries to achieve and how much effort they will put into their performance (Bandura, 1977).

Figure 2.5. Social Cognitive Theory (SCT)

![Social Cognitive Theory Diagram]

Source: Bandura (1977)

Bandura (2011) believed that the core concepts of this theory evolved around how the reproduction of an observed behaviour is inclined by the interface of three determinants:

- **Personal:** Whether the individual has high or low self-efficacy toward the behaviour (that is, get the learner to believe in his/her personal abilities to correctly complete a behaviour).
- Behavioural: The response an individual receives after they perform behaviour (that is, provide chances for the learner to experience successful learning as a result of performing the behaviour correctly).
- Environmental: Aspects of the environment or setting that influence the individual’s ability to successfully complete a behaviour (that is, make environmental conditions conducive for improved self-efficacy by providing appropriate support and materials)

2.6.4. Technology Acceptance Model (TAM)

Amidst all theories and models proposed and researched for studying the new technology acceptance, the Technology Acceptance Model (TAM) has gained a lot of acceptance and is widely used by the researchers across the world for assessing a new system.

![Technology Acceptance Model (TAM)](source: Davis (1989))

TAM, developed by Davis (1989), tries to advance the thoughts proposed in the TRA model by considering the perceived usefulness (PU) and perceived ease of use (PEU) as the key variables influencing the acceptance of newer technology or a system. TAM is based on the belief that a person’s intention to accept or try a new system or technology (behaviour intent) and the actual behaviour (use behaviour) are significantly related to that individual’s perception of how useful the technology is and how easy it is to use.
PU is formally defined as “the degree to which a person believes that using a particular system would enhance his/her productivity”, while PEU is “the degree to which a person believes that using a system will be free of effort (Davis, 1989). TAM has been tested many times on a variety of technologies and continues to garner strong empirical support in the Information Systems literature (Venkatesh&Bala, 2008).

Figure 2.6 shows that TAM depicts a relationship between users’ beliefs about a technology’s usefulness and the attitude and the intention to use the technology.

TAM has been utilised by the researchers across the world for studying acceptance decisions beyond information system and technology. TAM was used successfully to study adoption decisions outside of the traditional Information Systems realm, and in areas such as marketing (Dabholkar&Bagozzi, 2002; Gentry &Calantone, 2002; Yang & Peterson, 2004), advertising (Roger & Chen, 2002), green electricity use (Arkesteijn&Oerlemans, 2005) and technology banking (Mattila, 2003; Luarn& Lin, 2005; Cheong & Park, 2008; Lewis et al., 2010; Wessels&Drennan, 2010; Zhou, 2011; Sripalawat et al., 2011; Akturan&Tezcan, 2012; Tobbin, 2012; Amin et al., 2012; Guhr et al., 2013; Jeong& Yoon, 2013; Witeepanich et al., 2013. The predicted relationship also proved valid in international studies in cultures as varied as the England (Foster, 2005), Japan (Straub, 1994; Straub, Keil& Brenner, 1997), China (Venkatesh& Zhang, 2010), and Saudi Arabia (Abdulgader&Kozar, 1995).

2.6.5. Innovation Diffusion Theory (IDT)

The Innovation Diffusion Theory (IDT) was developed for assessment of the acceptance of innovative technologies. The model looks to determine the key factors that will influence the users to adopt the innovative technologies. Rogers (1995) tried to define both innovation and diffusion for the purpose of clarifying the use of these concepts in the IDT model. He defined innovation as “an idea, practice, or object that is perceived as new by an individual or other unit of adoption”. He
defined diffusion as “the process by which an innovation is communicated through certain channels over a period of time among the members of a social system”. Through these definitions it can be ascertained that this theory concentrates illuminating the basis on which the new ideas are accepted by the users.

Rogers (1995) utilises the attributes of new technologies as constructs to study the adoption of innovative technologies. The key constructs used in IDT theory are relative advantage, complexity, compatibility, trialability and observability of the innovative technology. But later Chen et al. (2000) argued that out of five constructs of the IDT model, only compatibility, relative advantage and complexity are more often linked to the adoption of innovative technologies.

2.6.6. Decomposed model of Theory of Planned Behaviour

Taylor & Todd (1995) introduced the idea that TPB beliefs can be decomposed into multidimensional constructs. Taylor and Todd noted that “the decomposed TPB model has advantages similar to TAM in that it identifies specific salient beliefs that may influence usage” (Taylor & Todd, 1995). They highlighted that a proper learning of the link between the belief structure and the antecedent of the intention needs decomposition of attitudinal beliefs. They tried to highlight that ‘decomposed TPB’ model carry higher explanatory capacity when compared to TRA and TPB.

Taylor & Todd (1995) advised that PU knitted in TAM is same as the relative advantage suggested in IDT, as both PU and relative advantage mark to relative enhancement in terms of the model outcome. Figure 2.7 shows that this model treats the ease of using on par with Rogers’ complexity variable, although in a converse way while assessing new technology acceptance. Past research advises the breakdown of subjective norm into two different proportions: interpersonal control and external persuasion (Bhattacherjee, 2000; Hsu & Chiu, 2004; Lin, 2007).

This school of thought has been used as a model for studying the customer behaviour in online retailing, to recognize the link between two behaviours such as
getting information and actual online purchasing (Chen, 2009; Hsu & Chiu, 2004; Lin, 2007; Pavlou & Fygenson, 2006).

Figure 2.7. Decomposed model of TPB

2.6.7. Technology Readiness Index (TRI)

Parasuraman (2000) developed TRI to gauge the consumer readiness on new technology. He used four dimensions in his model with 36 items to assess the technological readiness of the customers. TRI outlines optimism and innovativeness
as the key drivers which influence the customer readiness of technology, and also depicts discomfort and insecurity as the factors which hinder the readiness.

a. Optimism is understood in this model as a positive factor that explains the customer’s positive observation of technology and a conviction that it provides higher control, litheness and competence in. Optimism is a driver of technology readiness.

b. Another positive factor in TRI is Innovativeness. It explains the inclination of the customers to be a technology prepared and thought principal.

c. Discomfort was considered as a hindering factor in the model. It is understood as customer’s perceived lack of control over technology.

d. Insecurity is denoted in TRI as disbelief of the Customer’s on the technology as they doubt the competence of technology to accomplish task. It is considered as the inhibitor of technology readiness by Parasuraman (2000).

Subsequently many researchers used these four dimensions for assessing the respondents readiness on new technology and further classification based on their readiness (Colby &Parasuraman, 2002; Tsikriktsis, 2004; Lin & Hsieh, 2006; Liljander et al, 2006; Rhee et al., 2007; Elliott, Meng, & Hall, 2008; Lam, Chiang, &Parasuraman, 2008; Victorino et al., 2009; Rose & Fogarty, 2010).

Past studies also show that TR influences some of the key variables used in TAM (Lin, Shih &Sher, 2007; Lin & Hsieh, 2006). They considered TR variables as a construct in a modified version of the TAM to assess new technology acceptance. Recently, Guhr et al. (2013) also studied the effect of TRI factors through extended TAM. It concentrated on studying the impact of TRI factors on the behavioural intention towards Mobile payment acceptance (Guhr et al., 2013). TRI has been used in the past for categorising the customers based on it factor impacting on the acceptance. The past research have established TRI as a major tool for studying respondents who are familiar with the system, but this study concentrates on respondents those are not familiar with Mobile banking. Moreover this study aims at assessing the acceptance of Mobile banking to know if this channel can be used for including this visually impaired people and classification of VICs is not the agenda of this study, therefore TRI is not considered as model for assessing VICs in this study.
2.6.8. Triandis Model

Triandis Model (Chang & Cheung, 2001) offers a pronouncedly sociological account of interaction between the influential factors, emphasizing the relationship between attitude, intention, and behaviour. The authors showed that the extended Triandis Model is better suited than the original model for studying the intention to use Internet. This model portrays the constructs used in theory of reasoned action, TAM and theory of perceived behaviour.

From figure 2.8 it can be understood that Triandis model emphasises the effect of attitude on the intention and thereafter the impact of intention on the behaviour as highlighted in TAM. Beyond these constructs patronised from TAM, this model also takes into account a few other variables that include social factor, habit of the person and facilitating conditions. It suggests that chance of behaviour or a performance completely rests on the dynamics of the perceived outcome, social aspects and the consequence (Chang & Cheung, 2001)

Figure 2.8. Schematic Triandis Model

![Schematic Triandis Model](source)

The Triandis model’s inclusion of facilitation conditions into the assessment on new technology adoption is believed to have filled the gap that existed in TAM (Mathieson et al., 2001). Chang & Cheung (2001) has referred to facilitation conditions as the important resources needed and the support provided to produce behaviour. This model has been used by researchers to evaluate the acceptance of computers; web and information system packages (Cheung et al., 2000; Chang & Cheung, 2001)
2.6.9. Summary of models and theories

Understanding the nuances behind acceptance of a new system or technology, and the factors determining such adoptions gained importance at the end of twentieth century. Many models and theories emerged as a result of keen interest to study the background of new technology acceptance. The above sections provided a discussion on the models and theories developed for assessing the new system adoption. Table 2.2 will provide a summary of each of those models and their constructs for comparison.

Table 2.2. Models of New Technology acceptance and their constructs

<table>
<thead>
<tr>
<th>Models</th>
<th>Core Constructs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory of Reasoned Action (TRA) by Ajzen &amp; Fishbein (1980)</td>
<td>• Beliefs and Evaluation</td>
</tr>
<tr>
<td></td>
<td>• User Attitude</td>
</tr>
<tr>
<td></td>
<td>• Normative Belief</td>
</tr>
<tr>
<td></td>
<td>• Subjective Norms</td>
</tr>
<tr>
<td></td>
<td>• Behaviour Intention</td>
</tr>
<tr>
<td>Theory of Planned Behaviour (TPB) by Ajzen (1985)</td>
<td>• Behavioural control</td>
</tr>
<tr>
<td></td>
<td>• Attitude</td>
</tr>
<tr>
<td></td>
<td>• Subjective norms</td>
</tr>
<tr>
<td></td>
<td>• Behavioural Intention</td>
</tr>
<tr>
<td>Social Cognitive Theory (SCT) by Bandura (1986, 1989)</td>
<td>• Outcome expectations</td>
</tr>
<tr>
<td></td>
<td>• Self-efficacy</td>
</tr>
<tr>
<td></td>
<td>• Affect</td>
</tr>
<tr>
<td></td>
<td>• Anxiety</td>
</tr>
<tr>
<td>Technology Acceptance Model (TAM) by Davis (1989)</td>
<td>• Perceived Usefulness (PU)</td>
</tr>
<tr>
<td></td>
<td>• Perceived Ease of Use (PEU)</td>
</tr>
<tr>
<td></td>
<td>• Attitude</td>
</tr>
<tr>
<td></td>
<td>• Behavioural Intention</td>
</tr>
<tr>
<td>Innovation Diffusion Theory (IDT) by Rogers (1995)</td>
<td>• Relative advantage</td>
</tr>
<tr>
<td></td>
<td>• Complexity</td>
</tr>
<tr>
<td></td>
<td>• Compatibility</td>
</tr>
<tr>
<td>Model</td>
<td>Variables</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| **Decomposed model of Theory of Planned Behaviour by Taylor & Todd (1995)** | • Relative advantage  
• Complexity  
• Compatibility  
• Normative influence  
• Subjective norms  
• Efficacy  
• Facilitating condition  
• Perceived behavioural control  
• Behavioural intention |
| **Technology Readiness Index (TRI) by Parasuraman (2000)**           | • Insecurity  
• Discomfort  
• Innovativeness  
• Optimism |
| **Triandis Model by Chang & Cheung (2001)**                          | • Affect  
• Social factors  
• Perceived consequence  
• Habit  
• Intention  
• Facilitating condition |

The above mentioned table depicts the fundamental beliefs and significant variables for assessing the acceptance of new technology. Though there are eight models or theories used for assessing new technology acceptance or readiness to use or adoption, TAM is considered to be one of the most prominent models used by researchers for assessing technology acceptance (Ramayah & Jantan, 2004). Numerous studies in the past have extended TAM based models that are empirically verified to have higher validity (Davis, 1989; Mathieson, 1991; Adams et al., 1992; Segars & Grover, 1993; Chau, 1996; Igbaria et al., 1995, 1997). It is also commended for its high predictive nature (Mathieson, 1991) that makes it easy for applying it to various situations. Hence, TAM is noted as very significant and useful model for predicting the new technology acceptance (Ramayah, & Jantan, 2004).
TAM has become a common tool for assessing mobile banking acceptance as numerous studies in recent times have used TAM based extended models (Mattila, 2003; Luarn & Lin, 2005; Cheong & Park, 2008; Lewis et al., 2010; Wessels & Drennan, 2010; Zhou, 2011; Sripalawat et al., 2011; Akturan & Tezcan, 2012; Tobbin, 2012; Amin et al., 2012; Guhr et al., 2013; Jeong & Yoon, 2013; Witeeapanich et al., 2013) across the world. Therefore, this study looks to construct a TAM based model for assessing the acceptance of mobile banking the visually impaired people.

2.7. EVOLUTION OF TECHNOLOGY ACCEPTANCE MODEL

In order to develop a TAM based model for assessment, it is important to understand various factors used in TAM and extended models of TAM.

In 1985, Davis proposed that system use is a response that can be explained or predicted by user motivation, which in turn, is directly influenced by an external stimulus consisting of the actual system’s features and capabilities. He offered a conceptual model of TAM (Figure 2.9) for the first time in the year 1985.

Figure 2.9. Conceptual model of TAM

![Conceptual model of TAM](source: Davis (1985))

After the development of conceptual model of TAM, researchers came up with a sequence of TAM models with a lot of modification and addition of new variables into the theory. Various versions of TAM and its developments are discussed in the following sections.
2.7.1. Technology Acceptance Model – version 1

Davis (1986) refined his conceptual model to develop an Acceptance model in the name of TAM. The proposed model suggested that the perceived usefulness (PU) and the perceived ease of use (PEU) of a system’s new technology had a definite impact on the attitude towards using the new system. The model also established the direct impact of perceived usefulness on the attitude towards new technology as well as the behavioural intention.

Figure 2.10.First version of Technology Acceptance Model

![Diagram of Technology Acceptance Model](source)

The first version of TAM presented in Figure 2.10 also signifies the importance of perceived ease of use on the perceived usefulness of the new technology. The most important feature of the first version of TAM is the inclusion of attitude.

The researchers hypothesized attitude as one of the important factor to influence intention to use new technology. Inclusion of attitude as a variable originated through the study conducted by Ajzen&Fishbein (1980) which kept forward an argument which stressed the importance of attitude towards an object to influence intentions which, in turn, influence behaviour with respect to the object, that is, its use.
2.7.2. Refinement of version-1 of TAM

The revised version-1 of TAM came out with a few modifications after careful analysis and review of literature to ensure suitability and reliability. One of the key changes inculcated in the revised version is the exclusion of attitude as a variable to accept new technology. Attitude was included in the formulation of TAM, however, a subsequent study by Davis et al. (1989) conducted in a volitional environment demonstrated that the explanatory power of the TAM is equally good and it is more parsimonious without the mediating attitude construct. Later it became the norm to exclude the attitude construct from TAM. Therefore Davis et al. (1989) tried to establish that attitude may not be a strong determinant of intentions in workplace settings when other factors such as usefulness are independently taken into account as shown in Figure 2.11.

Figure 2.11.Revised version-1 of Technology Acceptance Model

Source: Venkatesh& Davis (1996)

2.7.3. Technology Acceptance Model – version 2

TAM2 was developed with the intention to extend TAM using in-depth study into antecedents. Figure 2.11 helps in understanding that TAM 2 was still built without attitude construct as it was excluded from the revised TAM 1, but it included two processes, namely the Social Influence Processes (Subjective Norm, Voluntariness, and Image) and the Cognitive Instrumental Processes (Job Relevance, Output Quality, Result Demonstrability and Perceived Usefulness). These two processes were treated to be important to the study of technology adoption.
TAM2 consists of ‘experience’ being used as a moderator variable for assessing the user acceptance. Figure 2.12 highlights that subjective norms control the intention to use through perceived usefulness and calls it as an internalization process in TAM2.

Figure 2.12. Technology acceptance model 2 (TAM2)

Source: Venkatesh & Davis (2000)

2.7.4. Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology model was formed by Venkatesh et al. (2003) following a review of eight competing models (including TRA, TAM and the diffusion of innovation theory) to explain Information System usage behaviour. Venkatesh et al. (2003) suggested that usage is affected by four elements, which are based on elements from previous models. The four elements include performance expectancy, effort expectancy, social influence and facilitating conditions.
Figure 2.13. Unified Theory of Acceptance and Use of Technology

Source: Venkatesh et al. (2003)

The model in Figure 2.13 posits three direct determinants of intention to use and two direct determinants of usage behaviour. Significant moderating influences of experience, voluntariness, gender and age were confirmed as integral features of UTAUT (Venkatesh et al., 2003). Although self-efficacy and anxiety appeared to be significant direct determinants of intention in SCT, the UTAUT model does not include them as direct determinants; therefore self-efficacy and anxiety have been considered as indirect determinants of intention fully mediated by perceived ease of use. Therefore the UTAUT emphasises that self-efficacy and anxiety have similar effect as it is different from effort expectancy and they have no direct effect on intention above and beyond effort expectancy.

2.7.5. Technology Acceptance Model- version 3

Venkatesh & Bala (2008) developed TAM 3 in which the factor perceived usefulness included perceived ease of use, subjective norm, image, job relevance, output quality and result demonstrability. In this model, the social influences are represented by subjective norm and image.
The determinants of ease of usefulness of TAM 3 traced in figure 2.14 were developed using the core and modification framing of human decision making that suggests that individuals will form early perceptions of ease of use depending on the core related to individual’s general beliefs regarding the technology of interest and its use. These early perceptions are then adjusted after hands-on experience with the new technology (Venkatesh, 2000; Venkatesh&Bala, 2008).
Venkatesh (2000) reckons four fundamentals knitted to perceived ease of use, out of which three of them reveal individual variations (computer self-efficacy, computer-anxiety and computer-playfulness) and the last a facilitating condition (perception of external control). The system attributes-based modifications are in the shape of perceived delight and intention usability. TAM 3 indicates that the core variables like computer self-efficacy, perception of external control, computer anxiety, and computer playfulness are regular predictors of ease of usefulness. But the effect of enjoyment and objective usability on ease of using new system is expected to increase along with experience (Venkatesh&Bala, 2008).

2.7.6. Overview of the evolution of TAM

Various versions of TAM have common roots as they all have perceived usefulness, perceived ease of use and the intention to use as common constructs which are influenced by external variables. The initial version of TAM owns attitude as a predictor for intention to use and it is determined by both perceived usefulness and perceived ease of use. But the later versions excluded attitude as the direct influence of perceived usefulness and ease of use was established on the behavioural intention. Various versions of TAM try to bring in new external variables that establish influence on the usefulness as well as ease of use.

Among all new technology acceptance and adoption models, TAM and its variants have gained a lot of importance. Several studies have already been conducted by extending TAM for assessing various technologies. This study will use fundamental constructs used in TAM apart from identifying new external variables that will be suitable for studying a special group, that is, visually impaired customers, and their acceptance of Mobile banking.

2.8. APPLICATION OF TAM

This study is directed towards assessing the Mobile banking acceptance, hence it critical to review and understand the application of TAM on various Mobile banking technology related studies. This section of the review will concentrate on
screening the studies that have used TAM based models to assess new technology adoption in banking. It will throw light on the application of TAM for studying the acceptance of Mobile phone based banking as well as studies conducted on visually impaired people. This section helps in identifying and understanding the constructs for the development of an extended model to be used specifically for the studying the visually impaired customers’ adoption of Mobile banking.

2.8.1. Assessing Mobile banking acceptance through TAM

Transformation of banking technology that is shifting from computer based banking provisions to Mobile phone based banking features has motivated several researchers across the world to conduct research on Mobile banking acceptance. Mobile banking has been introduced in the recent years and just started diffusing into many developing and under developed countries (Federal Reserve System, 2012). Hence study of Mobile banking acceptance is crucial to evaluate its potential and sustainability to include the unbanked.

This study is aimed at developing a TAM based model for evaluating Mobile banking acceptance, therefore this section of the review will focus on discussing the outcomes of the TAM based studies aimed at assessing the Mobile banking acceptance.

Mattila (2003) was a pioneer in using TAM based model for assessing the Mobile banking acceptance. The researcher’s extended TAM based model concentrated on identifying factors that were both influencing as well as inhibiting the customers to bank through Mobile phones. The outcome of the research highlighted the importance of variables like complexity, observability, relative advantage, compatibility and trialability on the customers’ decision related to banking acceptance. It also noted that security and confidentiality of the information exchanged through Mobile banking are the basic requirements for a successful adoption.

Luarn& Lin (2005) studied Mobile banking acceptance in Taiwan. TAM was extended with trust centric variable (perceived credibility) and two resource centric
factors (perceived self-efficacy and perceived financial cost) for studying the Mobile phone acceptance for banking. This study established that all the external variables impact behavioural intention and amongst all the variables, credibility was the most contributing variable to behavioural intention.

Cheong & Park (2008) conducted a study that examined the factors hindering the Koreans to access banking services through Mobile form. The researchers expanded TAM with additional constructs such as facilitating conditions and switching barriers, along with existing TAM variables for studying the Mobile payments. The outcome of the study highlighted that the facilitating conditions have positive impact on the intention to use Mobile for payments. The findings also showed that the variable switching barriers hinder the Mobile payment adoption. Cheong & Park (2008) also noted that risk factor is also a major hindrance to intention to adopt Mobile payment. Following Cheong & Park (2008), Gu et al. (2009) also conducted research amongst Koreans to examine the factors influencing the behavioural intention to adopt Mobile banking. The study proposed a TAM integrated model with trust as another important variable for behavioural intention. Apart from trust, the research also included self-efficacy, social influence, situational normality facilitating conditions, familiarity with bank, structural assurances and system quality. The research findings showed perceived usefulness as the critical construct to clarify the behavioural intention.

Lewis et al. (2010) investigated the variables hindering young customers from adopting Mobile banking services. They used a TAM model by additionally examining the effects of compatibility, trust, credibility, perceived risk and cost on behavioural intention. This study marked compatibility, risk, and perceived usefulness as the important variables for accepting Mobile phones to access banking services. The research showed that compatibility had a significant impact as well as identified it as an important antecedent for credibility, perceived ease of use and usefulness. It also clarified that both trust and credibility are important factors that will help in reducing the overall perception of risk on using Mobile phone for banking.
Wessels&Drennan (2010) conducted research to identify and test the key motivators and inhibitors for consumer acceptance of Mobile phone banking, particularly those that affect the consumer’s attitude towards, and intention to use this self-service banking technology. The research included attitude as a dependent variable that is influenced by the two additional antecedent beliefs. The model used in this study comprises of factors present in extended TAM that was developed for assessing service services technology by Curran &Meuter (2005). In addition to antecedents like perceived usefulness, ease of use, need for interaction and perceived risk adopted from extended model of Curran &Meuter (2005), Wessels&Drennan (2010) included cost and compatibility as independent factors that determine attitude. Prior to this research, cost was established as a negative factor in determining the Mobile banking adoption by Luarn& Lin (2005). Compatibility was first used by Rogers (1962) as a variable in Innovative Diffusion theory. Later other researchers (Chen et al., 2002; Wu & Wang, 2005) also used compatibility factor and found that high compatibility leads to an increased chance of technology adoption.

Zhou (2011) studied the effect of initial trust on Mobile banking user adoption. The study used extended TAM that added other factors like information quality (Zahedi& Song, 2008) and System Quality (Kim et al., 2004; Vance et al., 2008). The findings of this research highlighted that structural assurance and information quality are the important variables impacting initial trust, while information quality and system quality impact the perceived usefulness. Initial trust impacts perceived usefulness and both factors determine the usage intention of Mobile phones for banking. Many researchers have emphasised trust as one of the critical variables to influence user acceptance of various services using new technologies (Flavian et al., 2005; Chen &Corkindale, 2008; Fisher et al., 2008; Lu & Su, 2009). Prior studies have noted the effect of information quality on initial trust (Zahedi& Song, 2008). Siau&Shen (2003) divided Mobile trust into initial trust and continuous trust, both of which are affected by factors related to Mobile vendor and technology.

Sripalawat et al. (2011) examined the factors that have positive and negative impact on Mobile banking adoption. Subjective norms, perceived usefulness,
perceived ease of use and self-efficacy were treated as the impacting factors, and device barrier, perceived risk, lack of information and perceived financial cost came out be hindering factors to accept Mobile banking services. This study concluded that impact variables have higher influence on the Mobile banking adoption than the influence of hindering variables. Subjective norms were identified as the most influencing factor for Mobile banking acceptance.

Akturan&Tezcan (2012) investigated Mobile banking adoption through an integration of the technology acceptance model (TAM) with work on perceived benefits and perceived risks. They used TAM and extended the model using two more variables, namely perceived risk and perceived benefits. The researchers understood the importance of studying benefits as one of the recent studies revealed that studying Mobile banking acceptance should include cognitive and affective evaluation of utilitarian and hedonistic benefits (Kim. et al., 2007). The researchers included Jacoby & Kaplan’s (1972) five key facets of perceived risk to extend TAM to study the acceptance: financial risk, performance risk, social risk, physical risk and psychological risk. They found that perceived usefulness, perceived social risk, perceived performance risk and perceived benefit impact consumers’ attitude to accept Mobile banking, and that attitude is the important variable influencing the Mobile banking intention.

Tobbin (2012) conducted a qualitative study to explore the deeper motivations and interaction that cause an unbanked consumer’s intentions to adopt Mobile banking services. He used modified version of TAM with additional variables and marked that there is demand for banking services through Mobile phones. Hence to succeed in making people adopt Mobile banking services, banks need to market the idea of using Mobile banking services for operating savings and avail retail credits. Once consumers attain higher competence in using the new technology or system, they would feel easier to accept Mobile banking and also feel confident using Mobile technology. In terms of trust, a user friendly interface, increased network quality and recruitment of agents who can be trusted by the unbanked will influence their acceptance of Mobile banking services. The research also remarked that developing brand image will give confidence to customers’ and increase trust on Mobile banking system.
A study conducted by Amin et al. (2012) aimed at establishing relationship between factors and behaviour through an extended TAM. They expanded TAM by adding self-efficacy, perceived credibility and perceived enjoyment apart from using the standard TAM variables - perceived usefulness and ease of use, for assessing the Mobile banking adoption among Malaysian customers. Nevertheless, perceived usefulness and ease of use were proved unimportant in determining the behavioural intentions. This is one of the studies that challenge the very basic characteristics of TAM model as it highlights the insignificance of the perceived ease of use and usefulness.

Jeong& Yoon (2013) used TAM based modified model for examining Mobile banking acceptance. The researchers determined five factors that impact the behavioural intention to adopt Mobile banking: perceived usefulness, perceived ease of use, perceived credibility, perceived self-efficacy and perceived financial cost. The result highlighted that all the other variables except perceived financial have effect on the behavioural intention to accept Mobile banking services. Perceived usefulness has been established as the critical impact variable impacting the acceptance intention.

Witeepanich et al. (2013) extended Unified Theory of Acceptance and the Use of Technology (UTAUT) which originated from TAM. The researcher studied the variables influencing the acceptance of Mobile banking in Bangkok, Thailand. The study highlighted the relationship between social influence, trust, facilitating conditions, user perception, and user demographic and their influence on Mobile banking adoption. It also noted trust as the most critical determinant of the Mobile banking acceptance in Thailand.

The review in this section highlighted the studies conducted using TAM or TAM based research model for assessing key factors that determine the Mobile banking acceptance. All these studies involved normal persons. A visually impaired person’s acceptance of Mobile banking using new technology adoption model has not been researched hitherto.
Mobile banking can prove to be the most comfortable banking channel for visually impaired customers (VICs) as they are more comfortable with Mobile technology when compared to computer technology (Kumar & Anandkumar, 2012). Therefore there is a wide opportunity for studying the Mobile banking acceptance among visually impaired people using TAM based models.

2.8.2. Assessing the visually impaired people’s acceptance through TAM

Djamasbi et al. (2006) extended TAM with visually impaired persons on his study on library sciences. This research expands TAM for examining information accessibility as a prospective critical factor determining the perceived ease of use and perceived usefulness of accessing website for both normal people and people with visual impairment. The survey included both normal respondents as well as visually impaired persons. He extended TAM by adding perceived information access as a variable to assess the acceptance of information technology in library sciences. The extended TAM used in this research was not specifically developed for studying visually impaired respondents as it was a general model used for assessing both people with and without impairment. Therefore, scope exists to develop a model specifically for assessing the visually impaired people’s acceptance of new technology.

2.8.3. Understanding the constructs used in TAM and its extended models

This section provides a basic understanding about each of the constructs used to extend TAM. Tables 2.3 and 2.4 offer the meaning for each of the constructs used by extended TAM use for assessing Mobile banking adoption and also explain the variables used in TAM for assessing visually impaired people.

Table 2.3. Factors used to extend TAM on Mobile banking

<table>
<thead>
<tr>
<th>Meaning of the constructs</th>
<th>Studies that used the constructs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived ease of use: perceived ease of use is defined “the degree an individual believes that using a particular system would be free of</td>
<td>Lisa &amp; Judy (2010)</td>
</tr>
<tr>
<td></td>
<td>Koenig-Lewis et al. (2010)</td>
</tr>
<tr>
<td></td>
<td>Akturan&amp;Tezcan (2012)</td>
</tr>
</tbody>
</table>
**Perceived usefulness:** Perceived usefulness is defined as “the degree to which an individual believes that using a particular system would enhance his/her productivity” (Davis, 1989).

Perceived usefulness is defined as “the degree to which an individual believes that using a particular system would enhance his/her productivity” (Davis, 1989).

|----------------------|---------------------|---------------|-------------------|-------------------------|

**Attitude:** Attitude is described as an “individual’s positive or negative feelings (evaluative effect) about performing the target behaviour” (Fishbein&Ajzen, 1975).

|----------------------|---------------------|-----------------------|

**Intention-to-Use / Behavioural intention:** Fishbein&Ajzen (1975) explained it as the final decision of the customer to accept or reject the services.

|-----------------------------------------|---------------------|-----------------------------|-------------|---------------|

**Perceived Cost:** It is defined by Luarn& Lin (2005) as the extent to which “a person believes that using a service will cost money”.

|----------------|---------------------|-----------------------------|-----------------------|-------------------|-------------------------|

**Compatibility:** Compatibility is defined as the extent to which a new service is consistent with users’ existing values, beliefs, previous experiences and habits (Chen et al., 2002).

|---------------|------------------|------------|-------------------|-------------------------|

**Perceived Credibility:** Wang et al. (2003) defined it as the degree to which a potential user believes that the service will be free of security and privacy threats.

<table>
<thead>
<tr>
<th><strong>Perceived risk:</strong></th>
<th>Bauer (1960) has defined it in terms of uncertainty and unfavourable consequences perceived by the customer.</th>
<th>Jeong&amp; Yoon (2013)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trust:</strong></td>
<td>Trust has been defined as “the subjective probability with which consumers believe that a particular transaction will occur in a manner consistent with their confident expectations” (Chellappa&amp;Pavlou, 2002).</td>
<td>Chen (2008) Polasik&amp; Wisniewski (2009) Lisa &amp; Judy (2010) Koenig-Lewis et al. (2010) Akturan&amp;Tezcan (2012)</td>
</tr>
<tr>
<td><strong>Perceived Behavioural Control:</strong></td>
<td>Behavioural control is understood as the capacity to control the performance to attain goal. Bandura (1982) proved that behavioural control and self-efficacy are same. Bandura (1982) defined self-efficacy as the individual belief about his/her capability to perform in a certain manner to attain certain goals.</td>
<td>Kesharwani&amp;Bisht (2012) Amin et al. (2012) Jeong and Yoon (2013)</td>
</tr>
<tr>
<td><strong>Perceived benefits:</strong></td>
<td>Utility derived through adoption or product solution (Akturan&amp;Tezcan, 2012).</td>
<td>Akturan&amp;Tezcan (2012)</td>
</tr>
<tr>
<td><strong>Perceived enjoyment:</strong></td>
<td>Perceived enjoyment is defined as the extent to which the activity of using a technology is perceived to be enjoyable in its own right (Davis et al., 1992).</td>
<td>Amin et al. (2012)</td>
</tr>
<tr>
<td><strong>Information Quality:</strong></td>
<td>Information quality reflects information relevancy, accuracy and</td>
<td>Zhou (2011)</td>
</tr>
</tbody>
</table>
timeliness (Kim et al., 2004).

**System Quality:** System quality reflects the access speed, ease-of-use, navigation and appearance of Mobile banking (Kim et al., 2004).

**Perceived Economic factor:** Tobbin (2012) defined it as “the availability of surplus money being a determinant in adopting Mobile banking”.

**Facilitating Condition:** It is defined as “the degree to which an individual believes that an organization and technical infrastructure exist to support to use of the system” (Venkatesh et al., 2003).

**Social Influence:** Social influence is “the degree to which an individual perceives that others believe he/she should use the new system” (Venkatesh et al., 2003).

**Need for Interaction:** It is the desire to retain personal contact with service personnel during a service encounter (Dabholkar, 1992).

List of constructs explained in table 2.3 were identified through a review of previous studies utilising TAM based model for assessing Mobile banking acceptance.

Table 2.4. Constructs used in extended TAM for assessing visually impaired people

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Past Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perceived information accessibility:</strong> It refers to the ability to retrieve the desired information from the system (Culnan, 1984).</td>
<td>Djamasbi et al. (2006)</td>
</tr>
<tr>
<td><strong>Perceived ease of use:</strong> It is defined as “the degree an individual believes that using a particular system</td>
<td>Djamasbi et al. (2006)</td>
</tr>
</tbody>
</table>
would be free of effort” (Davis, 1989).

**Perceived usefulness:** It is defined as “the degree to which an individual believes that using a particular system would enhance his/her productivity” (Davis, 1989).

<table>
<thead>
<tr>
<th><strong>Intention-to-Use / Behavioural intention:</strong></th>
<th>Djamasbi et al. (2006)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fishbein &amp; Ajzen (1975) explained behavioural intention as the final decision of the customer to accept or reject the services.</td>
<td>Djamasbi et al. (2006)</td>
</tr>
</tbody>
</table>

Table 2.4 highlights the constructs used in the previous studies while extending TAM to assess the visually impaired people. This clarifies that, not much research has been conducted using TAM on visually impaired people’s acceptance of new technology in general and research conducted by Djamasbi et al. (2006) is the only study undertaken so far, to study visually impaired people using TAM. Theoretical assessment above also shows that there is a scope for developing new technology acceptance model specifically designed for assessing visually impaired people by extending TAM variables based on the market and the changing needs of the customers. Therefore this study looks to develop a TAM based model for assessing the VICs acceptance of Mobile banking using constructs identified through literature review and further screened through focus group interviews.

### 2.9. STUDIES ON INCLUSIVE BANKING FOR VICs IN INDIA

Kumar (2013, 2014) conducted studies visually impaired customers to study their perception on the existing inclusive banking initiatives. Kumar (2013) used ten inclusive banking initiatives identified from the RBI (2008) guidelines for including visually impaired people. The outcome of this study highlighted that time and information related inclusive banking practices marked negative response from the special segment (Kumar, 2013). This finding is a key to understand the gap between the current inclusive banking initiatives and the banking requirement of VICs. It clarified that VICs are still concerned with the existing technology based banking provisions and facilities.
Kumar & Anandkumar (2013) conducted a study on visually impaired customers’ attitude and intention to use computer-based electronic banking in order to find out if VICs would consider personal computer (PC) based banking as an inclusive banking tool. In spite of high literacy and technological competence of the respondents, the findings highlighted VICs’ negative attitude towards computer-based online/electronic banking and unwillingness to consider computer based banking as an inclusive banking tool. Further, Kumar (2014) studied the visually impaired customers’ attitude towards using Mobile phone for accessing the banking services. This study reported positive response from the special segment. Findings of this study highlighted that VICs shared a positive attitude on Mobile banking and also displayed keen interest on using SMS based Mobile banking services. This study, though helpful in understanding the attitude and willingness of VICs, neither used any model with validated constructs nor studied the acceptance or adoption of Mobile phone for banking. This limitation throws open a door for further research on studying the Mobile banking acceptance with an appropriate model with established constructs.

2.10. CONCLUSION

The literature reviewed in the chapter show various technology acceptance models used in the past and the relevance of TAM for assessing Mobile banking acceptance. It identified various key determinants used by researchers to extend TAM for assessing Mobile banking adoption. It highlighted the significance of TAM in assessing Mobile banking acceptance. Though TAM has gained a lot of importance in studying Mobile phone acceptance for accessing banking services, it has not been used for assessing the Mobile banking acceptance of a special group such as visually impaired people. TAM has been used for assessing visually impaired people by Djamasi et al. (2006) who are the pioneers in using TAM for assessing visually impaired people. However, they studied the visually impaired people’s acceptance of computers in the field of library science.

Review of previous studies indicate that an assessment of the VICs’ acceptance of Mobile banking as an inclusive banking tool has not been undertaken
using a structured model consisting of validated constructs. Though the current literature offers insight into a wide range of constructs and variables that can be used for assessing the Mobile banking adoption, it does not offer a technology acceptance model for specifically assessing the visually impaired people. This review of extant literature has contributed in building a conceptual framework for the study based on which a model for assessing visually impaired persons’ acceptance of new technology is developed.