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### A Study on Selected Antecedents of Online Banking Based on (Tam) Technology Acceptance Model in Selected Private Banks in Chennai, Tamilnadu, India

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#### ABSTRACT

Online banking constitutes a fusion of conventional banking and web technology, being increasingly patronized by banking sectors worldwide. Injection of IT facilities like online banking has led to improved service quality and superior service delivery within the banking sector. Although developed nations have implemented online banking, indicated a growing trend of online banking adoption by developing countries as well. The study consists of five antecedents to measure customer satisfaction towards online Banking in selected three private sector Banks in Chennai, Tamilnadu, India. The antecedents are identified with the help of technology acceptance model (TAM). The antecedents are Trust, Ease of Use, Accessibility, Intention to Use and Usage Constraints. Out of 5 hypotheses formulated, 3 hypotheses were accepted and two hypotheses were rejected based on the out of SEM mode. The study consists of 410 samples from the selected three private Banks.

**Keywords:** Online Banking, Trust, Ease of Use, Accessibility, Intention to Use and Usage Constraints.

#### 1. INTRODUCTION

Internet banking is nothing but banking on the internet-the network of networks. Internet banking is one of the tools of electronic banking (E-Banking) that enabled the customers to bank at their homes round the clock. Thus, Internet banking has enabled the 'AA' (Double A) banking possible, that is anytime and

anywhere banking. This service can be availed by the bank customers through their personal computers, laptops or palmtops or mobile phones or any other intelligent device.

Online or Internet banking is considered as an online revolution of the traditional banking services which offers customers the greatest expediency for performing banking transactions via the Internet (Furst, 2002; Ratnasingam, Gefen, & Pavlou, 2005; Yakhlef, 2001). All banks, especially the large banks and mutual banks, have gradually increased their number of Internet banking services available to customers over the past decades (Ratnasingam, 2005; Rayport & Sviokla, 1994). The most popular Internet banking services are viewing balances and transactions, fund transfers and payment of bills (Giordani, Floros, & Judge, 2009). Other Internet banking services such as statement aggregation have also gained a growing popularity.

There is a steady increase in online banking acceptance since the year 2000 (Liao & Cheung, 2002). As Internet access exceeded globally, banks worldwide have increased their business investments in Internet technology driven by the expectation that the Internet technology would provide better opportunities to establish a distinctive strategic position compared to other traditional forms of banking services. Online banking is particularly well-practiced in the developed countries such as Korea, Spain, UK, USA and Austria, where more than 75 percent of all banks offer transactional services via the online/Internet. The development of the Internet as a service and marketing channel has breached the geographical and industrial barriers, creating new products, services and market opportunities.

Online banking constitutes a fusion of conventional banking and web technology, being increasingly patronized by banking sectors worldwide. Injection of IT facilities like online banking has led to improved service quality and superior service delivery within the banking sector. Although developed nations have implemented online banking, indicated a growing trend of online banking adoption by developing countries as well. As per global online banking penetration data released by the statistics portal Statista, 423.5 million people (28.7 percent of the internet audience) accessed online banking web sites globally as on, 2014. The statistics reveals that Asia-Pacific region is marked low penetration.

In the recent years, banking sector in India have been marked by exponential growth and remained fairly unscathed from the ill-effects of financial meltdown owing to a proactive and prudential regulatory regime. According to an IBEF (2015) report, total banking assets in India touched \$1.8 trillion in 2013 and are anticipated to cross \$28.5 trillion by 2025. The total banking sector credit is anticipated to grow at a CAGR of 18.1 percent to reach \$2.4 trillion by 2017. Further, the Indian banking has the potential to become the fifth largest banking industry in the world by 2020 and third largest by 2025.

Thus it becomes inevitable for the banks to adopt technology for expanding its customer reach and delivering high-quality service experience at all times. As per statistics from Internet and Mobile Association of India, 29 percent banking customers refrain from banking online citing information privacy concerns. A McKinsey survey of 2014 had revealed that only 12 percent of the bank account holders in India are using the online medium for availing banking services. Such numbers provide a strong rationale toward exploring the factors which motivate and those which dissuade the banking customers in India toward using internet banking. A sound and effective online banking facility has the potential to enhance customer satisfaction along with overall bank performance.

In particular, Human behavior takes time to adjust and accept the paradigm shift in the environment and in technology. Banking through online is inevitable. Banking customers are still familiar only with

traditional banking. The conversion rate from traditional banking to online banking is increasing but not satisfactory and up to the expected level of conversion. This makes Banks vital to identify the factors which embrace them to utilize the cost effective tool, online Banking.

By providing findings based on antecedents of online banking towards predicting customer satisfaction, this study provides valuable suggestions to policy makers and top management of the Selected Banks.

## 2. REVIEW OF LITERATURE

### A. Antecedents of Online Banking System

- (i) **Economic benefits:** The utility from the product itself, representing perceived economic benefits from the products/services purchased, is the core objective of the consumer engaged in the purchase process. Existing studies investigate various economic factors that might influence the outcome of credit sales, and such factors include consumer search cost, membership cost and interchange fees. Most banks not only offer their online services free of charge due to the low cost efficiency (Stern, 2004), but also pay significantly higher interest rates on deposits because of the lack of name recognition. Adopting an online payment system will significantly reduce the paperwork, cut the postage cost of sending bills, and increase the operating efficiency of vendors such as credit-providing banks. As a result, some credit card issuing banks provide a bonus to consumers who switch to a “paperless” online billing system. The efficiency of online shopping is also increased by the Internet in terms of the availability of product information, enabling direct multi-attribute comparisons, and reducing prospective buyers’ information searching costs.
- (ii) **Convenience:** Unlike the offline “brick-and-mortar” offices, online shopping, banking and payment sites typically do not close. Their services are available 24 hours a day, 7 days a week. Consumers benefit from the speed and round-the-clock availability of Internet banking services (Cheng, 2006), and enjoy the conveniences of online shopping such as reduction in shopping time, timing flexibility and saving of physical effort. Consumers also favor the mobility and the associated convenience of accessing their bank account balances and/or bills at any time and any place. For example, the adoption of an electronic payment method allows online payers to check and pay their bills when and where they want to without having to wait for their paper bills to be sent to a pre-specified mailing address at a fixed time interval. Therefore, when consumers can conveniently access the Internet, they should have a greater intention to adopt an online e-commerce system.
- (iii) **Trust:** Trust is a critical aspect of e-commerce because of the absence of proven guarantees that the e-vendor will not engage in harmful opportunistic behaviors. Institutional trust, based on guarantees and recommendations from third parties, is the most important mode of trust creation in business environments where there is no previous interaction and where the buyers and sellers may come from different social and cultural backgrounds.

New technologies have created new risks for privacy, but they can also provide privately generated solutions. Many new companies offer software to ensure anonymous browsing, disable cookies, and even develop personal or company firewalls to enhance e-mail security. The security of monetary transactions is another one of the frequently cited concerns about e-commerce activities.

Trust can be built through institution-based mechanisms such as certification issued by the third party. Certification deals with licenses and accreditation, which testify to the ability and expected behavior of the trusted party.

- (iv) **Website design:** Existing empirical research suggests that both the availability and the quality of design significantly could affect consumers' interest in and performance of e-commerce websites (Ranganathan & Ganapathy, 2002; Lee & Cata, 2005). The design of a B2C website plays an important role in attracting, sustaining and retaining the interest of a consumer at a site. B2C websites often use animation, video, music and other multimedia effects to capture consumer attention. A good design also needs to provide adequate functional support to meet e-commerce consumers' needs at each stage of their decision processes (Liang & Lai, 2002). One of the important functional supports provided by a website that makes a consumer comfortable is the ease with which it could be navigated. Consistent navigation links to each page of the website, useful navigation buttons, and an index to the website have been suggested as important issues when designing a B2C website.
- (v) **Usage Intention:** Khanifar (2012) empirically established that perceived e-service quality and subjective norm have significant direct influence on customer's intention to use. Sentosa (2012) explained in detail applicability of TAM with regard to internet banking usage intention. Computer self-efficacy plays a critical role in confirming the intention of online banking usage. Extant literature on brick and mortar banking and service quality include prominent studies by Johnston (1995, 1997) and Johnson et. al., (2008).
- (vi) **Perceive Risk, Perceived Usefulness and Perceived Ease of Use:** PEOU has shown a significant effect on PU in the majority of studies (Venkatesh & Davis, 2000). Given that PU is defined as the prospective user's subjective probability that using a specific technology will increase the user's job performance, PEOU and PU will be positively associated. The more useful and easy to use is the website in enabling the users to accomplish their tasks, the more it will be used (Gefen, 2003). Prior studies have also shown that experience may be a factor moderating the relationship between PEOU and PU. The more experienced the users are, the less the effect of PEOU on PU.

Because consumers consciously and unconsciously perceive risk when evaluating products and services for purchase and/or adoption, it is necessary to include a measure of PR into TAM. Usage of the Internet delivery medium adds uncertainties and potential dangers due to its perceived unsecured nature (Featherman & Pavlou, 2004). The combination of probability of loss and cost of loss that make up perceived risk has been shown to inhibit product evaluation such as PU in TAM. The adoption of online payments can also be explained in part by the TAM (Davis, 1989). According to TAM, the intention to use a new technology is determined by the PU and PEOU for the specific technology.

A common and widely recognized obstacle to e-commerce adoption has been the lack of security and privacy over the Internet. This has led many to view e-commerce as a risky undertaking. Consumers are very sensitive with regard to services that involve monetary transactions, in which case they worry about both money and information loss (Hourahine & Howard, 2004). E-finance makes it easier to manage consumers and to customize products.

### 3. HYPOTHESES DEVELOPMENT

The perception of accessibility is considered as one of the important dimensions in the extant literature. The concept of accessibility in this study consists of accessibility to computer equipments, information access, system reliability, and ease in learning (linguistics), network strength. All the above mentioned factors are considered as the physical dimensions of terminal access and system suability. Moreover, applications accessibility by facilitating end-user accessibility and usability, improving usage intentions and derived satisfaction have a decisive bearing in overall client satisfaction. The accessibility ensures the customer satisfaction in terms of using e-banking (Sadeghi and Hanzaee (2010).

In banking, relationship or interaction with banking peoples are very important. But in online banking usage constraints are identified by the ability of the user to independently use the online banking formalities without any external interference. Conversations with banking customers across systemically important banks have revealed end-user detachment in such instances involving resorting to external assistance for troubleshooting in the form of system manuals, another end-user, etc.

Based on the customer experiences, their expectation can be determined with the help of expectation confirmation theory. When the customer experience is positive it will induce the customer to use online banking repeatedly, rather than traditional banking system. When there is a positive adoption of online banking in shows that the customer is satisfied. It can be conformed that when positive experience from online baking with the belief of error free transaction, it leads to customer satisfaction.

In information systems literature, the ease of use has highlighted as a measurement influencing user satisfaction and a determinant of information technology adoption. In terms of commercial web sites, ease of use was empirically found to have a direct and positive effect on satisfaction, while Liao and Cheung (2008) tested ease of use as a measure of consumer satisfaction with online banking. Yoon (2010) validated ease of use as an antecedent of internet banking customer satisfaction.

New technologies have created new risks for privacy, but they can also provide privately generated solutions. Many new companies offer software to ensure anonymous browsing, disable cookies, and even develop personal or company firewalls to enhance e-mail security. The security of monetary transactions is another one of the frequently cited concerns about e-commerce activities. Trust can be built through institution-based mechanisms such as certification issued by the third party. Certification deals with licenses and accreditation, which testify to the ability and expected behavior of the trusted party. According to Lee and Chung (2009) and Zhou (2011) Trust derives a positive and significant impact with customer satisfaction.

The key determinant for any business success is customer satisfaction, and also with respect to online banking. In the present arena Bank uses different media to provide customized and tailored fit services based on predicting customer requirement and needs. Across world many studies are done in determining the factors responsible for online banking adoption, neglecting to measure the core outcome customer satisfaction (Cabanillas, 2013).

**H1:** Accessibility to the online banking service of a bank positively determines satisfaction toward the service

**H2:** Extent of Usage Constraints involved in using online banking service determines the overall satisfaction derived from the service

- H3:** Expected usefulness-based intention to use determines end-user satisfaction of an online banking customer.
- H4:** Ease of use of an online banking service of positively determines service satisfaction derived.
- H5:** Trust in online banking creates positive impact on customer satisfaction.

#### 4. THEORETICAL FRAME WORK BASED ON TECHNOLOGY ACCEPTANCE MODEL

The study validates Trust, Ease of Use, Accessibility, Intention to Use and Usage Constraints as major constructs toward online banking adoption, along with ultimate outcome construct, i.e. overall customer satisfaction. Each dimensions in the study consists of 6 individuals statements.

<i>S.No.</i>	<i>Constructs</i>	<i>Source Adopted</i>	<i>Definition</i>
01.	Trust	Gupta and Kamilla (2014) Zhu and Chen (2012)	Subjective assessment of one party that another party will perform a particular transaction according to his or her confident expectation in an environment characterized by uncertainty
02.	Intention to Use	Sentosa (2012) Khanifar (2012)	Usage intention represents the future prospects of availing online banking services by a customer. Its achievement results in satisfied customers
03.	Usage Constraints	Gupta and Kamilla (2014)	It refers to the extent to which an end user of online banking facility requires assistance for beneficially using the system
04.	Ease of Use	Yoon and Kim (2009) Casalo (2008)	It indicates the comfort of interacting with the internet banking web site and the extent to which it is comprehensible
05.	Accessibility	Chau and Lai (2003)	Accessibility refers to access to online banking web site in terms of user interface and ability to avail desired banking service
06.	Satisfaction	Rod, (2009) George and Kumar (2013) Yoon (2010)	An overall perception drawn by customer from online banking experience. A favorable performance in terms of above cited dimensions is expected to act as antecedents of satisfying web banking experience

#### 5. METHODOLOGY

The present study is a quantitative research where the data is analyzed in terms of numbers that can be quantified or summarized. The focus of a quantitative research is concise and narrow. Data is collected by distributing structural instruments such as questionnaires to samples, which represents the population. Quantitative data is more efficient as the cause and effect relationships of variables specified in the hypotheses of the study can be tested using statistics, tables and discussions.

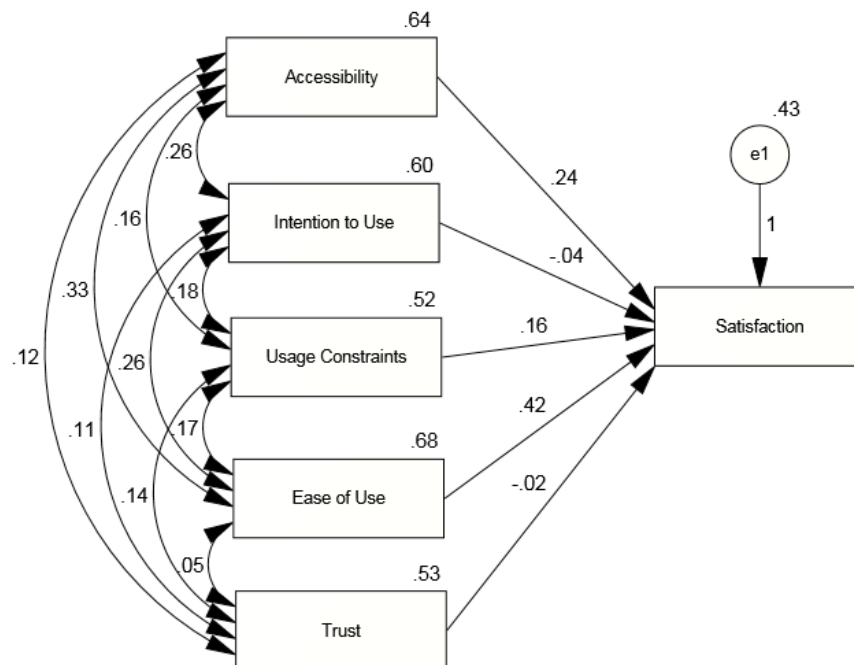
The study considered five factors as the antecedents of online Banking based on Technology Acceptance Model (TAM). The antecedent factors are Trust, Accessibility, Usage Intention, Usage Constraints and Ease of use. Based on the antecedents of online banking, the study measures the ultimate outcome customer satisfaction. As the population is high and could not predict the exact size, convenience sampling techniques is adopted in this study. The customers were asked that whether they are using bank technologies (ATM, Online Banking, Banks App, and Mobile Banking) minimum of one time in a day. Those customers in private sector Banks (ICICI, HDFC, Axis Bank) who utilize Bank technology at least once a day are considered as the population for the study. The customer who accepted to participate in the

research, questionnaire was distributed. Thus the sample size for the study is 410. The responses measured on a Five point Likert Rating Scale (Strongly disagree (1) to strongly Agree (5)).

## 6. RESULTS AND DISCUSSIONS

The reliability of the dimensions was checked with the help of Cronback alpha and validity measures. All the dimensions considered in the study attained composite reliability above 0.7, and the average variance explained is above 0.5, but below 0.7. The cronback value is above 0.8 for all dimensions considered in the study. The uni-dimensionality checked with confirmatory Factor analysis, in which all the dimension explained above 50% of variance.

- (i) **Structural Equation Modeling:** Initially, questionnaire is getting explored and confirmed through EFA and CFA. The next step deals with framing of hypotheses based on the proposed framework and testing then using SEM technique, employing the maximum likelihood methods. Based on the obtained values of fit indices, testing is getting conformed. First, loading estimates were examined to make sure that they p-value are the measures of overall model fit. In the model developed for the research for measuring the relationship is measured. The model demonstrated satisfactory cut-off values if fit indices and mentioned estimates at 95 percent confidence level (GFI = .888, CFI = .987, RMR = 0.067 and RMSEA = 0.015).



- (ii) **Testing of Model Hypotheses:** The path coefficient model table shows the relationship between the dimensions developed based on the research model. The table summarizes the path coefficient obtained after testing the relationship between the dimensions.
- (iii) **Path Co-efficient testing the Relationship between Dimensions:** It is found that the antecedents of online Banking like Accessibility, Usage Constraints and Ease of use came out to be significant with customer satisfaction. The dimension Intention to use and Trust of online banking antecedents found to be not significant with customer satisfaction.

	<i>Relationship</i>	<i>Estimate</i>	<i>S.E.</i>	<i>C.R.</i>	<i>P</i>	<i>Hypothesis Number</i>	<i>Remark</i>
Satisfaction	<--- Accessibility	.243	.049	4.961	***	H1	Accept
Satisfaction	<--- Intention to Use	-.038	.049	-.784	.433	H2	Reject
Satisfaction	<--- Usage Constraints	.162	.049	3.277	.001	H3	Accept
Satisfaction	<--- Ease of Use	.424	.047	8.997	***	H4	Accept
Satisfaction	<--- Trust	-.021	.047	-.460	.646	H5	Reject

The squared multiple correlations indicate the amount of variance explained by the antecedents of online Banking and its influence towards customer satisfaction. It is estimated that the predictors of Customer Satisfaction towards online banking explains 57.8 percent of its variance.

### 7. DISCUSSION AND IMPLICATIONS

Free-wheeling deliberations with banking customers disclose the fact that customers have concerns towards privacy of information while banking in an online medium which eventually lowers the Trust placed on similar platforms. Further, the quality of output of generated by internet banking websites have failed to meet the general expectations of banking customers. Customers also clearly mentioned that response time of online banking websites lack consistency. This undermines the level of trust and reliance. Banks must strive towards investing in website safety, data encryption and maintenance with a view to ensure round the clock provision of high quality service in a secured online environment. ‘Keeping the commitment and promises’ being a pre-expected element fails to contribute strongly in terms of Trust generation. A possible explanation for this can be the fact that online banking users expect the system to meet stated transactional timelines at all times. This makes it vital for the bankers to move beyond this expectation to identify additional avenues towards achieving customers’ trust.

- (i) **Intention to Use:** Banks should undertake efforts towards creating an urge for adoption of internet banking practices among customers. It has been observed that the existing customers are not willing to recommend others to adopt online banking channel. This limits the extent to which the bank can augment its customer base, as word of mouth by existing customer group serves as strong promotional tool for the bank.
- (ii) **Usage Constraints:** The customers indicated a preference for an in-built help feature towards the internet banking platform. The individual banks may consider including a tutorial towards availing varied services offered via online banking within the online banking website itself. Banks should further ensure that the customer interface towards the online banking application be user-friendly and comprehensible. The terminologies used within the website must be self-explanatory and enable the user to avail the desired service without any external assistance. An internet banking user, irrespective of online banking experience, may find it relatively inconvenient to perform banking activities online, and thus prefer conventional branch banking. Bankers must focus to improve constraint factors for both existing as well as new users of online banking keeping this in view.
- (iii) **Ease of Use:** Banks have managed to work effectively in terms ease of usage. The banks in a bid to continually provide easy to use services can take up regular customer feedback and inputs about their individual service experiences. Bankers should strive towards improving website navigation and interactivity, ensuring the time spent per activity by an individual customer on their



online banking website is minimized. A multi-lingual banking website can enhance its usability manifold, more so in a nation like India marked by cultural and linguistic diversity. Customers banking online can be put off at the prospect of direct verbal interaction with service executive mid-way through an online banking session. Thus, demonstrations and other features aimed at diluting user constraints should ideally be offered as a part of the online banking set-up itself.

- (iv) **Accessibility:** Accessibility of all the services which are available via branch banking on round the clock basis is expectation of common banking customer. Banks must view online banking as tool to minimize customer's branch visits to the extent possible. Such a practice will cumulatively boost the bank's bottom-line by cutting down on service delivery cost and operating costs at branch level. Account login being the primary step towards accessing the banking facilities in an online environment, the customers' expect the procedure to be a smooth and unrestricted under most circumstances. Bankers must strive to ensure cross platform access of their online banking facility such as on computer and mobile handsets.

## 8. CONCLUSION

Commercial banks operating within the country can take up the extant results and work towards making their online banking websites user friendly in terms customer interface and internal navigation. They should also be well informed with all possible types of phishing, hacking and unauthorized data encryption possibilities which may severely undermine customer privacy and faith on bank's online banking facility. Customer feedback surveys may be conducted by the banks on a quarterly basis by floating questionnaire within their banking portals. The commonly and frequently cited concerns over successive quarters extracted from the feedback survey can then be worked upon by the individual banks towards alleviating customer concerns and ensuring a safe online banking regime.

Our research posits Trust, Ease of Use, Usage Constraints, Intention to Use and Accessibility as valid and key factors towards driving online banking adoption habits amongst banking customers in India. The study brought to light positive effect of Accessibility, Usage Constraints and Ease of use on overall customer satisfaction in India, while Trust and Intention to use were portrayed a weaker and negative effect respectively on overall customer satisfaction. The results of the study will be of significance to e-banking practitioners in terms planning and development of online banking portals.

Future researchers may undertake similar study in Indian context with a larger sample size and considering nationalized banks also along with private Banks, which will enable better generalization of the results.

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