Factors Influencing Consumer Adoption of Internet Banking in India

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Abstract

The Banking industry has undergone a dramatic change since internet penetration and the concept of internet banking. Internet banking is defined as an internet portal, through which customers can use different kinds of banking services. Internet banking has major effects on banking relationships. The primary objective of this research is to identify the factors that influence internet banking adoption. Using PLS, a model is successfully proved and it is found that internet banking is influenced by its perceived reliability, Perceived ease of use and Perceived usefulness. In the marketing process of internet banking services marketing experts should emphasize these benefits its adoption provides and awareness can also be improved to attract consumers’ attention to internet banking services.
Introduction

Internet banking is creating dramatic changes for the banking industry. Internet banking is defined as an internet portal, through which customers can use different kinds of banking services ranging from bill payment to making investments. Banking can be done literally from anywhere if one has a computer and net connectivity. Internet banking helps consumers in conducting fast and convenient financial transaction activities.

In many countries, internet banking has gained wide acceptance and India is no onlooker to this phenomena. Banks in India started embracing technology in a massive way in the 90’s, led in particular by the new private banks and multinational banks. The growing competition and growing expectations led to increased awareness amongst banks on the role and importance of technology in banking, forcing banks to go in for the latest technologies so as to meet the threat of competition and retain their customer base.

There are a lot of benefits through adoption of internet banking for the banks and their customers. On the whole, Internet banking increases operational efficiencies and reduces costs, besides giving a platform for offering value added services to the customer, thereby fulfilling all the essential prerequisites for a flourishing banking industry. A study by IAMAI (2006) reveals that costs of banking service through the internet amount to a fraction of the costs through conventional methods. According to the survey, assuming teller cost at Re 1 per transaction, ATM transaction costs is Re 0.45, phone banking is Re 0.35, debit cards costs Re 0.20 and Internet banking costs only Re 0.10 per transaction. However, banks cannot expect instant returns, unless the Internet population itself does not reach a critical mass. In today’s environment besides their physical branches, banks need to enhance non-branch delivery networks as a part of their growth strategy.

The primary objective of this research is to identify the factors that influence internet banking adoption for which the constructs defined by the TAM model have been used to predict adoption.
A new construct “Perceived reliability” is proposed to enhance the understanding of an individual’s acceptance behaviour of internet banking with respect to consumers’ perceived security, privacy issues and the perceived risk of consumers. Consumer awareness of internet banking is proposed as the precursor of forming positive attitudes with respect to usefulness, ease of use and reliability, and ultimately adopting internet banking. Using PLS, the model is successfully proved and it is found that internet banking is influenced by its perceived reliability, perceived ease of use and perceived usefulness.

**Review of Literature**


Several studies indicate that online bankers are the most profitable and wealthiest segment to banks (Mols, 1998; Robinson, 2000; Sheshunoff, 2000). There could be two fundamental reasons underlying internet banking development and diffusion: cost savings for banks and reduction of branch networks which has paved the way to self-service channels as quite many customers felt that branch banking took too much time and effort (Karjaluoto et al., 2003). Therefore, time and cost savings and freedom from place have been found the main reasons underlying online banking acceptance (Polatoglu and Ekin, 2001; Black et al., 2002; Howcroft et al., 2002).

On the customer front internet banking provides many advantages (Pikkarainen et al, 2004; Hway- Boon and Cheng Ming Yu,2003). Time and cost savings and freedom from place have been found the main reasons underlying online banking acceptance (Polatoglu and Ekin, 2001; Black et al., 2002; Howcroft et al., 2002). Several studies have analyzed consumer adoption and growth of internet banking.

As noted earlier, online banking offers many benefits to banks as well as to customers. However, in global terms the majority of consumers are still not using online banking channel. There exist
multiple reasons for this. To start with, new online users need first to learn how to use the service (Mols et al., 1999. Second, customers have been afraid of security issues (Sathye, 1999; Hamlet and Strube, 2000; Howcroft et al., 2002). Ndubisi et al (2004) also established the importance of adequate security in order to raise the confidence of consumers to use internet banking.

The Technology Acceptance Model (TAM)

The technology acceptance model seems to be the most widely accepted model for IT innovations. The TAM is an adaptation of the theory of reasoned action (TRA) (Ajzen and Fishbein, 1980) specifically tailored for modeling user acceptance of new information technology (software information systems within organizations) (Davis, 1989). TRA suggests that social behaviour is motivated by an individual’s attitude towards carrying out that behaviour. It posits that the actual usage of technology can be predicted by user's behavioral intention and his/her attitude towards use, which in turn are influenced by the technology's perceived ease of use and perceived usefulness.

Davis (1989) used the theory of reasoned Action (TRA) and developed the Technology Acceptance Model (TAM). Based on certain beliefs, a person forms an attitude about certain objects, on the basis of which one forms an intention as to how one should behave with respect to that object. The intention to behave is the sole determinant of actual behaviour. Davis adapted the TRA by developing two key beliefs, Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) to determine individual's acceptance of a technology more specifically information system usage. The first of these beliefs perceived usefulness is defined as the 'degree to which a person believes that using a particular system would be beneficial or enhance his/her job performance' (Davis, 1989). The second, perceived ease of use is defined as 'the degree to which a person believes that using a particular system would be free of effort' (Davis, 1989).

TAM has received empirical support in information technology research by many research studies regardless of the country concerned (Wang et al.2003; Venkatesh and Moriss, 2000). One key benefit of using the TAM to understand system usage behaviour is that it provides a framework to investigate the effects of external variables on system usage (Hong et al, 2001).
The Research Model

Based on literature review and discussions with three banking professionals, a model indicating the acceptance of online banking was developed (Figure 1). The model consists of three factors that probably have an effect on consumer’s acceptance of internet banking in the Indian context. They are Perceived Usefulness (adopted from TAM), Perceived ease of use (adopted from TAM), Perceived reliability (variable included for this study). Awareness is modeled as having an indirect influence on internet banking adoption through influencing the three belief variables.

Figure I: The Research Model

Awareness

Consumers’ level of awareness of internet banking influences the adoption of internet banking. The internet banking literature supports that individual factors like knowledge (Sathye, 1999; Polatoglu and Ekin, 2001) has an impact on consumer’s adoption of internet banking. Sathye (1999) highlighted that many consumers were simply unaware of internet banking and its unique benefits. Here knowledge refers to the consumers’ awareness of internet banking and the benefits associated with internet banking, and their knowledge of how to use basic technology. Colgate et al (2003) stated that when consumers made decisions for different alternatives in the market place, the awareness of the existing alternatives was a determinant for consumers to stay with their current banking provider. In this context, Sathye (1999) and Polatoglu and Ekin(2001) empirically supported the idea that consumer knowledge had an effect on electronic banking
adoption. Sathye (1999) found that the lack of awareness about electronic banking and its benefits contribute to the non-adoption of electronic banking. Furthermore, Polatoglu and Ekin (2001) stated that the more knowledge and skills a consumer possessed about electronic banking, the easier it was for the consumer to utilize electronic banking. Therefore consumers who are more aware of internet banking are more likely to perceive internet banking as more useful, easy to use and more reliable, thereby influencing adoption of internet banking. Hence the following hypotheses are framed as shown in Figure one.

H1: Awareness level of consumers on the concept of internet banking has a positive effect on the perceived ease of use of internet banking.

H2: Awareness level of consumers on the concept of internet banking has a positive effect on the perceived usefulness of internet banking.

H3: Awareness level of consumers on the concept of internet banking has a positive effect on the perceived reliability on internet banking.

Perceived Usefulness
Davis (1989) asserts that the decision to use new technology is determined by the extent to which a person believes that it is cost effective in providing goods or services compared to the current method. PU is defined as the degree to which a person believes that using a particular technology will enhance his performance. The PU is also an important variable from TAM (Araujo and Araujo, 2003; Noteberg et al. 2003). PU has been confirmed as an important variable that influences users’ technology acceptance and therefore has received a great deal of attention from previous researchers. Internet banking provides two major advantages: convenience (Dabholkar, 1996; Gerrard and Cunningham, 2003; Karjoluoto et al, 2002; Meuter et al, 2000; Polatoglu and Ekin, 2001) and quick service (Karjaluoto et al, 2002; Kluglak, 1997), compared to traditional banking services. Convenience and effective management of personal finances are two advantages in using internet banking. Therefore if consumer perceives internet banking to have perceived usefulness, then the consumer is more likely to perceive internet banking as easy to use and reliable and also influence adoption of internet banking. Hence the following hypotheses:
H4: Perceived usefulness has a positive impact on perceived ease of use of internet banking
H5: Perceived usefulness has a positive impact on perceived reliability on internet banking
H6: Perceived usefulness has a positive impact on consumer adoption of internet banking

**Perceived Ease of Use**

Perceived ease of use refers to the degree to which a person believes that using a particular system would be free of effort. Extensive research over the past decade provides evidence of the significant effect of perceived ease of use on usage, either directly or indirectly through its effect on perceived usefulness (Agarwal and Prasad, 1999; Davis et al, 1989; Hu et al, 1999, Venkatesh, 1999; Venkatesh and Davis, 1996, 2000; Venkatesh and Morris, 2000). Information technologies that are easy to use will be less threatening to the individual (Moon and Kim, 2001). This implies that perceived ease of use is expected to have a positive influence on users in their interaction with internet banking systems. It is also found that ease of use positively correlates with use of consumer technologies, such as computer software (Davis, 1989; Venkatesh and Davis, 1996). Suganthi et al (2001) label one of their dimensions “ease of use” showing its effect on internet banking adoption. Therefore the more the consumer perceives internet banking as easy to use, the more he or she is likely to adopt internet banking. Hence the following hypothesis:

H7: Perceived ease of use has a positive effect on consumer adoption of internet banking

**Perceived Reliability**

Customers frequently do not trust internet technology for two specific reasons: Security of the system and worries about the reliability of internet services (Lee and Turban, 2001). Strong concern about security is one common factor related to unwillingness to use internet channels for commerce (Black et al, 2001). Most customers are not satisfied with the infrastructure of web security systems (Black et al, 2002). In internet banking, security is one of the most important future challenges, because customers fear higher risk in using the web for financial transactions (Aladwani, 2001; Black et al, 2002; Gerrard and Cunningham, 2003; Sathye, 1999).

This study considers “Reliability” which explains the degree to which internet banking is perceived to be safe and reliable” in the offering and secure transmission of financial
transactions. If the potential adopter of internet banking perceives that the new technology is not safe and believes that mistakes are likely to occur, she or he is not likely to adopt (Dabholkar, 1996). Sathye (1999) and Polatoglu and Ekin (2001) found that the security dimension was an important determinant for consumers who used electronic banking. Furthermore, Sathye (1999) found that security was positively related to the use of electronic banking. For banks, their immediate need is not simply to reduce fraud in internet banking. It is also about retaining consumers’ confidence and making customers rely, not just in their bank and its ability to deliver secure access to their money, but also in internet banking as a key delivery channel. Therefore perceived reliability is expected to have a positive influence on adoption of internet banking.

H8: Perceived reliability has a positive impact on consumer adoption of internet banking

Research Methodology

Data Collection Procedure
Data for this study was collected by means of a survey conducted in Coimbatore, India in January 2009. A total of 100 questionnaire forms were given to respondents of which 60 were returned with a response rate of around 60 percent. All the respondents were professionals from the educational industry who were internet banking users. It was interesting to find that all the respondents had minimal usage (use rarely) of internet banking. The questionnaire consisted questions related to background, possible factors affecting acceptance of internet banking and use of internet banking services. Likert five point scales ranging from “Strongly Agree” to “Strongly disagree” were used as a basis for questions.

Reliability and validity
Reliability of the factors was estimated by using cronbach’s alpha. The reliability and Average Variance extracted (AVE) values are given in table one. The correlation of latent variables is shown in Table two. Since all AVE values are greater than 0.5 and Cronbach’s alpha is greater than 0.70, convergent validity of the constructs in the model is proven.
Table I: Reliability and Average Variance Extracted (AVE)

<table>
<thead>
<tr>
<th>Construct</th>
<th>Composite Reliability</th>
<th>AVE</th>
<th>Cronbach Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td>0.925605</td>
<td>0.717839</td>
<td>0.901806</td>
</tr>
<tr>
<td>PC</td>
<td>0.896936</td>
<td>0.597718</td>
<td>0.859418</td>
</tr>
<tr>
<td>PEOU</td>
<td>0.840700</td>
<td>0.637729</td>
<td>0.714763</td>
</tr>
<tr>
<td>PU</td>
<td>0.918513</td>
<td>0.694602</td>
<td>0.883286</td>
</tr>
</tbody>
</table>

Establishing discriminant validity requires an appropriate AVE analysis. It is tested to see if the square root of every AVE (there is one for every latent construct) is much larger than any correlation among any pair of latent construct. As a rule of the thumb, the square root of each construct should be larger than the correlation of the specific construct with any of the other constructs in the model and should be at least 0.50. From table two, it can be noticed that AVE is greater than r square; discriminant validity is established for all constructs in the model.

Table II Correlation of latent variables

<table>
<thead>
<tr>
<th></th>
<th>Awareness</th>
<th>PC</th>
<th>PEOU</th>
<th>PU</th>
<th>Adoption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC</td>
<td>0.442</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEOU</td>
<td>0.712</td>
<td>0.441</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU</td>
<td>0.669</td>
<td>0.501</td>
<td>0.611</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Adoption</td>
<td>0.556</td>
<td>0.550</td>
<td>0.421</td>
<td>0.528</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Data analysis and Results

The average age of respondents was 32 years. Close to 55 percent of the respondents were male. All the respondents belonged to the middle income and the upper income level. In analyzing the demographics there seemed to be no difference in the education level or occupation, but there is a significant variation between the male and female groups on their awareness level. Males have significantly higher scores than females on their level of awareness. There is no relationship between adoption and marital status.
The study uses partial least squares for data analysis. The result shows that all relationships are significant at 95 percent level. Internet banking adoption is predicted by awareness, perceived ease of use, perceived usefulness and perceived reliability. Almost forty percent of the variance is explained by the model in the adoption of internet banking. The following table represents the result of testing the structural links of the research model using PLS analysis. The estimated path coefficients are given along with the associated t value. All the coefficients are significant at 95 percent significance level providing strong support for the hypothesized relationships. The results represent the confirmation of the model as shown in Figure 2. The results of the hypotheses testing i.e. relationships verified path coefficient, t- statistics and whether the hypothesis is supported or not is shown in Table three.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Effects</th>
<th>Path co-efficient</th>
<th>t-statistics</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Aware &amp; PEOU</td>
<td>0.552</td>
<td>5.35</td>
<td>Supported</td>
</tr>
<tr>
<td>H2</td>
<td>Aware &amp; PU</td>
<td>0.668</td>
<td>10.38</td>
<td>Supported</td>
</tr>
<tr>
<td>H3</td>
<td>Aware &amp; PR</td>
<td>0.190</td>
<td>1.35</td>
<td>Supported</td>
</tr>
<tr>
<td>H4</td>
<td>PU &amp; PEOU</td>
<td>0.246</td>
<td>2.25</td>
<td>Supported</td>
</tr>
<tr>
<td>H5</td>
<td>PU &amp; PR</td>
<td>0.373</td>
<td>2.53</td>
<td>Supported</td>
</tr>
<tr>
<td>H6</td>
<td>PEOU &amp; ADOP</td>
<td>0.095</td>
<td>1.23</td>
<td>Supported</td>
</tr>
<tr>
<td>H7</td>
<td>PU &amp; ADOP</td>
<td>0.290</td>
<td>3.44</td>
<td>Supported</td>
</tr>
<tr>
<td>H8</td>
<td>PR &amp; ADOP</td>
<td>0.361</td>
<td>3.20</td>
<td>Supported</td>
</tr>
</tbody>
</table>

The relationship between awareness level and perceived ease of use was found to be significant (β =0.552) thereby supporting hypothesis 1. The relationship between awareness level and perceived usefulness was found to be significant (β =0.668) thereby supporting hypothesis 2. The relationship between awareness level and perceived reliability was found to be significant (β =0.190) thereby supporting hypothesis 3. The relationship between perceived usefulness and perceived ease of use was found to be significant (β =0.246) thereby supporting hypothesis 4. The relationship between perceived usefulness and perceived reliability was found to be significant (β =0.373) thereby supporting hypothesis 5. The relationship between perceived ease of use and internet banking adoption was found to be significant (β =0.095) thereby supporting hypothesis 6. The relationship between perceived usefulness and internet banking adoption was found to be significant (β =0.290) thereby supporting hypothesis 7. The relationship between
perceived reliability and adoption was found to be significant ($\beta = 0.361$) thereby supporting hypothesis 8. Hence all hypotheses are supported.

**Figure 2 : Hypothesis testing model**

The $r$ square values of awareness influencing perceived ease of use, perceived usefulness and perceived reliability is 0.547, 0.446 and 0.270 respectively. Perceived ease of use and perceived usefulness are both influenced by awareness to some extent although not extensively. All the relationships are positive showing that the relationships exist. Awareness influences perceived usefulness to a larger extent, while perceived ease of use has the least influence on internet banking adoption. This could be because, the sample consisted of teaching professionals and bankers who already find computers and internet easy to use and hence did not feel that it is the primary influencing factor towards adoption of internet banking. In sum, all hypotheses have been proved, in that, Awareness, need, perceived usefulness, perceived ease of use, perceived reliability clearly have a positive effect on the use of internet banking, as almost 40 percent of the variance is explained by the model.

**Managerial contributions**
The model has successfully proved that internet banking is influenced by its perceived reliability along with other variables adopted from the TAM model. In the marketing process of internet banking services marketing experts should accentuate the benefits its adoption provides i.e. ease of use and usefulness and reliability. Awareness can also be improved to attract consumers’ attention to internet banking services. Further sufficient care should be taken to enable customers to rely on the security offered by the internet bank, as it certainly affects consumers’ adoption of internet banking. This can be done by the bank providing the consumers reassurances and information and by assisting consumers in developing secure internet banking practices and risk management procedures.

**Limitations and Further Research**

The study has few important limitations that affect generalizations of the findings. The first limitation concerns the sample, which comprised of only one socio-economic status and occupation, teaching professionals. This has an effect on the generalization of the findings. Another limitation regards the size of the sample. The size of the sample is very small to make generalizations on adoption of internet banking. Another limitation concerns inclusion of only one moderating variable. On this basis, the model might also suffer from the fact that other possible factors influencing the acceptance of online banking were not included in the model. These limitations pave the way to future studies. Furthermore, another interesting avenue for further research could be a detailed study on internet banking usage including respondents from different backgrounds.

**References**


Appendix

QUESTIONNAIRE

PART I:
Please select the response that best describes your answer with a ☑
1. Age 
   ☐ Less than 25 ☐ 25-35 ☐ 36-45 ☐ 46-55 ☐ > 55
2. Gender : ☐ Male   ☐ Female
3. Marital status :
4. Highest Education level (Years of education):
   ☐ Higher secondary
   ☐ Bachelors / UG / Diploma
   ☐ Masters / PG
   ☐ Doctorate / PhD
   ☐ Professionally qualified
5. I use internet banking
   ☐ Regularly   ☐ Frequently   ☐ Often   ☐ Occasionally   ☐ not at all

PART II:
Please state your level of agreement or disagreement to the following statements regarding your attitude towards internet banking with a ☑

(SA : Strongly Agree, A : Agree, N : Neutral, D : Disagree, SD : Strongly Disagree)

<table>
<thead>
<tr>
<th>STATEMENTS</th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
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</thead>
<tbody>
<tr>
<td>1. Internet banking enables people to conduct financial transactions more quickly.</td>
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<tr>
<td>2. Internet banking improves one’s effectiveness in conducting banking transactions.</td>
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<tr>
<td>3. Internet banking makes it easier to conduct banking transactions</td>
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<td>4. Internet banking provides convenience since it is available 24 hours, 7 days of the week.</td>
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<td>5. Internet banking saves time compared to traditional banking.</td>
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<td>6. It would be easy for me to become skilful at using internet banking</td>
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<td>7. Learning to use internet banking is easy.</td>
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<td>8. Overall I believe that Internet banking is easy to use.</td>
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<td>9. Banks offering Internet banking implement security measures to protect their customers and have adequate safeguard mechanisms</td>
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<td>10. Using internet banking is as safe as using other modes of banking</td>
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<tr>
<td>11. Internet banking is reliable and can be used for my banking transactions</td>
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<td>12. Internet banking can be trusted. There are not many uncertainties.</td>
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<td>13. I am aware of internet banking and the facilities it offers</td>
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<td>14. I am aware of what needs to be done, to become an internet banking user</td>
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<tr>
<td>15. I am aware of the services that could be done using internet banking</td>
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</tbody>
</table>
16. I am aware of the security and privacy issues of internet banking