CHAPTER VI

SUMMARY OF FINDINGS AND IMPLICATIONS

This chapter presents a summary of the research, its objectives and analysis and, the major findings of the study. It also includes a brief discussion and implications of the study followed by the limitations of the study and future directions for research.

6.1 Summary of Objectives and Analysis

The Technology Acceptance Model (TAM) has been used in many of the researches to explain diffusion of technology in countries like the United States and other developed countries. However, there is no empirical evidence that information-technology acceptance models established in these countries can apply equally to developing countries like India. It is required that these models be modified to account for the different context.

This research discussed existing literature and presented an extended Technology Acceptance Model to predict internet banking usage intention in the Indian context. Extending the Technology Acceptance Model for internet banking acceptance promises to assist in predicting attitude and acceptance and thereby provides meaningful information that can serve as a basis for designing educational and communication strategies to foster greater acceptance of internet banking among consumers.

The primary objective of the study was to bring out an extended Technology Acceptance Model (TAM) for predicting usage intentions of consumers with regards to internet banking. The TAM was extended
by drawing on constructs from a range of theories. Following an extensive literature review, Self-efficacy, Awareness, Perceived Security and Consumer trust in internet banking (CTIB) were included as additional variables to the Technology Acceptance Model (TAM) and the following objectives were framed:

• To propose a theoretical framework for establishing a research model that gives a good understanding of factors that influence consumer intention to use internet banking.

• To extend the Technology Acceptance Model by incorporating Awareness (AWA), Self efficacy (SE), Perceived security (PS), Consumer Trust on internet banking (CTIB) and examine its influence on consumers’ intention to adopt internet banking.

• To bring out a set of antecedents for Consumer Trust on Internet banking (CTIB), that can explain individual’s intention to adopt internet banking.

• To assess the empirical validation of the proposed model for internet banking acceptance.

Although the major objective of the study was to bring out an extended model based on the TAM and trust literature, out of curiosity, two more objectives with regards to demographic influences were also analyzed as given below:

• To identify the difference, if any, in consumer intention to use internet banking by age, gender, education and Income.

• To examine the influence of age, education and income on consumer intention to use internet banking.
The study was conducted in Coimbatore, Tamilnadu using a sample of 655 internet banking registered customers. A structured questionnaire was used as the instrument for the study. Items selected for the constructs were mainly adopted from prior studies to ensure content validity. A pilot study was conducted and reliability of the constructs was assessed by calculating the Cronbach’s alpha. For all the constructs the value was greater than the accepted level of 0.70 (Hair et al., 2006).

Given the theory-driven approach to scale development, the Confirmatory Factor Analysis (CFA) approach was employed for scale validation of the main study. The measurement model of structural equation modeling called the Confirmatory Factor Analysis (CFA) helps in establishing validity and reliability. CFA was performed using the Maximum Likelihood (ML) model estimation technique, and various psychometric checks were carried out to establish validity and reliability.

The output showed that each indicator (factor loadings > 0.50) loaded significantly on the constructs (p<0.001), which reflects the convergent validity of the constructs (Anderson and Gerbing, 1988). Further the Average Variance Extracted (AVE) for all the constructs in the model was greater than 0.50, which again supported convergent validity. The AVE values were greater than the inter-construct squared correlation estimates and supported discriminant validity of the constructs (Fornell and Larcker, 1981).

Different common model-fit measures were used to assess the model’s overall goodness of fit: Root Mean Square Residual (RMR), Goodness of Fit index (GFI), The Adjusted Goodness of Fit Index (AGFI), The Normed fit Index (NFI), Relative Fit index (RFI), Comparative Fit index (CFI), Tucker Lewis Index (TLI). The model is an over identified model. The confirmatory factor analysis showed an
acceptable overall model fit. Next the SEM was conducted on the structural model using Amos18 to test the hypotheses formulated. The model fit indices also provide a reasonable model fit for the structural model. Hence it is concluded that the proposed research model fits the data reasonably well. Hypotheses one through twenty having factor loadings ranging from 13 to 41 percentage are accepted.

It was found that consumer intention to use internet banking is influenced by Perceived Usefulness (PU), Attitude (ATT), and Consumer Trust on Internet Banking (CTIB), where Attitude is influenced by Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and Perceived Security (PS). The three beliefs: PU, PEOU and PS are influenced by consumers’ Awareness of internet banking (AWA) and Consumers’ Self efficacy (SE). The antecedents of Consumer Trust on Internet banking (CTIB) are Bank’s benevolence (BBEN), Bank’s integrity (BINT), Bank’s Competence (BC), Structural assurances (STAS) and Personal Disposition to Trust (DIS). These five factors influence consumer intention to use internet banking (INT) through Consumer Trust on Internet banking (CTIB).

Select demographic factors were analyzed to find out if there was any significant difference in consumer intention to use internet banking and also to find out if these factors impacted intention to use internet banking. It was found that there is a significant difference in consumer intention to use internet banking across age, gender, education and income groups. It was also found that age had a significant negative relationship although very negligible with consumer intention to use internet banking as indicated by the $r^2$ value of 0.031 meaning that only 3.1 percent of the variation in consumer intention to use internet banking is explained by these factors.
6.2 Summary of Hypotheses Testing Results

With respect to the present research work and consistent with the original formulation of TAM and Trust in electronic commerce literature integrated to conduct the study, the measurement model was confirmed with adequate convergent and discriminant validity. All the twenty hypothesized relationships were supported.

At the conceptual domain of the model, the formulation of the extended TAM provides insights into what influences individual intentions to use internet banking.

Based on the objectives, hypotheses one to twenty were framed to establish the extended model and were tested using Structural Equation Modeling (SEM).

Two more hypotheses were framed to analyze the demographic influence on usage intentions. Among them hypotheses twenty one were tested using one way ANOVA, while hypothesis twenty two was tested using multiple regression analysis.

The summary of the hypotheses testing results along with the method used is presented in table 6.1.
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<th>Hypothesis</th>
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<td>H22</td>
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* Significant at p<0.01 level, ** Significant at p<0.05 level
6.3 Major Findings of the Study

The summary of the major findings of the study are:

1. Consumer intention to use internet banking is influenced by Perceived Usefulness (PU), Attitude (ATT), and Consumer Trust on internet banking (CTIB), and Attitude is influenced by Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and Perceived Security (PS), and Consumer Trust on Internet banking (CTIB).

2. Perceived usefulness (PU), Perceived Ease of Use (PEOU) and Perceived Security (PS) are influenced by Consumer Awareness of internet banking (AWA) and Consumers’ Self Efficacy (SEF).

3. Self Efficacy (SEF) significantly influences perceived usefulness (PU), Perceived ease of use (PEOU) and Perceived security (PS).

4. Consumer awareness of internet banking (AWA) significantly influences Perceived Usefulness (PU), Perceived Ease of Use (PEOU) and Perceived Security (PS).

5. Attitude (ATT) towards intention to use internet banking is significantly influenced by Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Perceived Security (PS) and Consumer Trust on Internet Banking (CTIB).

6. Perceived Usefulness (PU) influences consumer Intention (INT) to use internet banking both directly and indirectly through influencing Attitude (ATT) towards intention to use internet banking.
7. Perceived Ease of Use (PEOU) influences consumer intention to use internet banking (INT) indirectly through its influence on Perceived Usefulness (PU) and Attitude (ATT) towards intention to use internet banking.

8. Perceived Security (PS) influences consumer intention to use internet banking (INT) indirectly through its influence on Consumer Trust on Internet Banking (CTIB) and Attitude (ATT) towards intention to use internet banking.

9. Consumer Trust on Internet Banking (CTIB) influences consumer intention to use internet banking (INT) directly and indirectly through influencing Attitude (ATT) towards intention to use internet banking.

10. Attitude (ATT) influences consumer intention to use internet banking (INT).

11. Consumer Trust on Internet banking (CTIB) influences consumer intention to use internet banking (INT).

12. The antecedents of Consumer Trust on Internet banking (CTIB) are perceived Bank Benevolence (BBEN), Bank Integrity (BINT), Bank Competence (BCOM), Perceived Security (PS), Structural Assurances (STAS) and Personal Disposition to Trust (DIS).

13. Consumer Trust on Internet Banking, Attitude towards intention to use internet banking and Perceived Usefulness are significant predictors of consumer' intention to use internet banking, altogether explaining 79 percent of the variance in consumer intention to use internet banking.
14. There is a significant difference in consumer intention to use internet banking across age groups.

15. There is a significant difference in consumer intention to use internet banking across gender groups.

16. There is a significant difference in consumer intention to use internet banking across education groups, except the groups of doctorates and masters degree holders who hold similar intentions.

17. There is a significant difference in consumer intention to use internet banking across income groups.

18. Age, income and education have a negligible but significant impact on consumer intention to use internet banking.

19. The extent of influence of Age on usage intentions is negative, meaning that as age increases, consumer intention to use internet banking decreases.
6.4 Discussion and Implications of the Study

The rate at which technology innovations like the internet banking is adopted by consumers constitutes an important part of the technology change or integration. Investigation of firm-specific and market specific characteristics which influence decision to adopt innovations has been, in the past recognized as an important area of study. There are a number of studies on adoption of new technology, but only a handful of studies focus on the financial services industry. An understanding of the factors affecting this choice of technology for transacting with banks is essential both for the creators and producers of such technology.

This study suggests that the Technology Acceptance Model, which is the basis of much of the research in Information Technology (IT) diffusion, will be more useful if it is integrated with specific issues like Trust on the customer side and more basic elements of the security aspects of technology and service on the side of the banks. The earlier research initiatives in the field of social psychology particularly of developing the TAM and its constructs have found support.

The major features of this study in addition to what are mentioned in the earlier chapters are:

1. The successful application of the Technology Acceptance Model (TAM) in internet banking, which is new in the context of Information Technology. This makes it quite different from prior studies.

2. Consideration of many dimensions relevant to the Indian context to predict consumer intention to use internet banking,
while many studies have added only one or two factors to existing models.

3. The use of the Technology Acceptance model (TAM), which has been continuously proved right and extendable by many researchers around the globe.

4. Sample from all the three sectors of banks, namely, public, private and foreign, with proportionate representation from public and private sector banks.

5. Selection of advanced statistical technique like Structural Equation Modeling (SEM), One way ANOVA, and multiple regression analysis in assessing the research model.

6. This study is the first of its kind in India, in terms of using Structural Equation Modeling (SEM) which is a complex statistical technique, for analysis in the internet banking scenario. There is no other study in the context of internet banking adoption in India that has used SEM.

Hence this study is unique and proposes practical implications for banks that have invested huge amounts of money in developing internet banking systems and are in the process of marketing these internet banking systems or developing strategies for internet banking adoption. The implications of the findings of this study are that, banks need to play a leading role in influencing the perception, and thereby the attitude and behavior of the current and potential internet banking users.

The results through this study will help to understand that consumer’s perceptions and activities can be initiated to improve the usage of internet banking. This can lead to reductions in cost of
operation for banks as branch banking is more expensive compared to internet banking.

This study has contributions and managerial implications to the information system knowledge base as well as banks in India. Among them are:

1. First, the results of this study has shown that Computer Self Efficacy and Awareness influences Perceived Usefulness, Perceived Ease of Use, and Perceived Security, and that Perceived Usefulness, Perceived Ease of Use and Perceived Security have significant effect on behavioral intention to use internet banking through attitude towards internet banking. All these factors are to be considered by banks while developing an internet banking system.

2. This study has shown that Perceived Security is one of the important determinants of individual acceptance of internet banking. This suggests that incorporating security as one of the determinants of behavioral intention to use Internet banking is appropriate.

3. The internet banking authorities need to develop the beliefs of usefulness, ease of use and security of the customers with regards to internet banking.

4. In the Indian context, Self-Efficacy and Awareness of the consumers of internet banking seem to predominantly influence their belief systems with respect to internet banking. This calls for familiarizing the customers in all aspects related to internet banking.

5. As other electronic commerce activities share similar characteristics with internet banking, the results suggest the need
to incorporate perceived security in ecommerce adoption models also.

6. The study confirms the role of Consumer Trust on Internet banking as influencing Consumer intention to use internet banking. Hence the emphasis that banks give to building trusting internet banking systems is to be given top priority.

7. The study has made clear the antecedents of Consumer Trust on Internet banking by confirming the earlier established constructs in the context of internet banking acceptance in India. This identification of trust on internet banking systems as a multidimensional construct may help decision makers in assessing the trust levels of their customers and consequently will benefit the management for developing marketing strategies. It needs no mention that banks, and specifically all branches need to develop systems of trust as it plays a paramount role in enabling customers' use of internet banking systems.

8. Perceived Bank Benevolence, Bank Integrity and Bank Competence or expertise, are major factor that influence internet banking trust systems and these are within the control of banks, and banks are encouraged to exhibit these characteristics through their marketing systems.

9. Structural Assurances, which are authentication systems mostly by a third party organization, or encryption methods used to protect consumer data are also to some extent within the influence of the management of banks. These could also include the existing legal systems which provide for the safety of internet banking customers.
10. In general, the awareness levels of internet banking among customers can be enhanced through various media, as this has a positive impact on the usefulness and attitude towards internet banking. Communication relating to the benefits and usage of internet banking systems may be periodically sent or informed to customers using all forms of media advertising such as leaflets, brochures, web pages etc. This will be useful to introduce the services to a wider audience and educate potential customers about the benefits of internet banking.

11. At a further level of analysis, personal demographic characteristics of the respondents such as age, education, income and sex were used as parameters to identify if there is any significant difference in their intention to use internet banking and also to identify if they have any impact on consumer intention to adopt internet banking. Basically speaking these demographics, do not as much matter as long as the customer is aware of internet banking and is self efficient in computer usage.

12. The usefulness of internet banking systems, the ease of use and the built in fool proof system can be highlighted to build a positive attitude towards internet banking in the minds of consumers.

13. Banks may need to improve their web site designs and navigation, increase the ease of usage, strengthen website security and make customers feel that there is a lot of advantage in using internet banking.

14. Additionally and most importantly, banks need customers who trust their internet banking systems. Trust can be built by banks only by proving their ability to handle such huge complex information systems and being more benevolent to customers’
needs, while displaying integrity in all transactions of the bank. Banks may also reinforce in the minds of their consumers, the structural assurances like a third party verification, website security certificates and the like.

15. The banks can in general use push or the pull strategies to enhance internet banking usage. Pull strategies would basically involve enabling customers to recognize internet banking by emphasizing the advantages of internet banking services i.e., time savings, low cost, convenience, information availability. Banks can also attract customers to the website by providing a well designed and user-friendly website, provide demonstration in the bank premises or public places and regularly survey the customers’ response to the internet banking procedures.

16. The ease of use could also be used to attract customers, by regularly monitoring customers’ access; implementing traffic management systems for internal and external users; coordinate services with internet service providers.

17. Building customers’ confidence is equally important. The perceived security levels of the customer can be enhanced by presenting the security measures adopted by the bank in both technical and non-technical terms. Customers should also be given a brief outline of the procedures to be followed if problems occur, and also be given information on how to use internet banking services without the fear of data invasion.

18. In future, banks can also think of offering incentives such as free internet access, member rewards and other frequent user benefits.
19. On the other hand banks can also use the ‘pull strategy’ through effective collaborations, thereby increasing the service value. Collaboration with internet service providers, offering free internet access; expanding banking services across all bank branches are some of the methods that can be adopted by banks. Banks would also benefit by supporting the government to enact electronic commerce laws; work with regulators, and provide education on the uses of internet and internet banking.

Academically speaking, the development of a conceptual model that predicts factors that influence internet banking usage intentions, which is an information technology system is a significant contribution, followed by the empirical support for the proposed hypotheses based on extensive literature review. This can be generalized as the result is an indication of the good explanatory power of the model for usage intentions of internet banking.
6.5 Limitations and Future Directions of the Study

Although this study has some limitations, the study of internet banking predictors will educate administrators and marketers concerned with internet banking in their designing of marketing strategies. Some of the limitations of this empirical study that should be addressed in the future are:

1. First, investigation of internet banking acceptance in India is relatively new to information systems researchers in India.

2. The second limitation refers to the fact that the model was tested against a single type of innovation, internet banking. In order to be considered better than previous models, a model has to undergo testing in multiple and different categories.

3. The third limitation comes from the selection criteria of respondents that do not accommodate generalizations of results as this study used respondents from Coimbatore city alone. However this is not considered a serious limitation as Coimbatore is a known industrial and business hub.

4. This study has focused on registered users of internet banking who may be inexperienced or one time users of internet banking. Prior research suggests that determinants of behavioral intention change in terms of users’ level of experience (McKnight et al., 1998; Karahanna et al., 1999). Therefore future studies may concentrate on non-internet users to investigate their adoption intentions of such services.

5. In sampling, there is a possibility of duplication of accounts, as a customer can have multiple accounts in multiple banks or
branches. Hence an individual customer can fit as a customer under any category of private, public or foreign sector banks or even belong to multiple categories.

6. The proportion of bank customers from private, public and foreign bank categories was not equal, although roughly proportionate to the numbers of banks in Coimbatore. Particularly speaking the number of respondents who belonged to the foreign banks category was very less.

7. Additional research, both longitudinal and cross-sectional, is needed to examine the differences of this framework as more users evolve from being aware of internet banking, to experiencing internet banking, and continue usage of internet banking.

8. Future studies could incorporate the variables identified, once the internet banking users has reached a critical mass. In this way a more comprehensive investigation of internet banking intentions and usage behavior can be conducted.

9. This study of internet banking adoption could be extended to corporate customers and a comparison could be made between the two audiences on their perceptions and reasons for internet banking adoption.

10. This research identifies that there are many factors that could affect the success and effectiveness of internet banking in India. Some of these factors may not be identified in the existing literature on IT adoption, as most of this research is conducted in developed countries for which the technology was originally created.

11. As with previous adoption studies, the factors selected may not cover all the factors that could influence the adoption of internet
banking in India. Hence there may be a need to search for additional variables that will improve the ability to predict usage intentions more accurately. For example, facilitating conditions might be added to this extended TAM.

12. The discussion, findings and implications are obtained from one single study that examined one technology and focused on registered internet banking users, the results therefore cannot be generalized to other technologies or groups of people.

13. The actual usage behavior has not been incorporated in the model. However this is not a serious limitation as there is substantial empirical support for the causal link between intention and behavior (Taylor and Todd, 1995; Venkatesh and Davis, 2000; Venkatesh and Morris, 2000).

14. Although more work is needed to determine a more detailed understanding of the factors themselves, and their influence on user behavior, it is suggested that this model could be useful for those in governments and the banking industry that have an economic imperative to establish India in the global marketplace. To this end this model can be used as the basis of a more extensive empirical study of Internet banking in India itself.

15. Further research could expand the survey to the other states in India.

16. Future research could also examine website characteristics, and whether they have any influence on usage intentions.

17. Additional research to evaluate the validity of this study's findings are needed as longitudinal evidence might enhance
understanding of the causality and interrelationships between variables that are vital for internet banking usage.

18. Once the number of internet banking users reaches a critical mass, a more comprehensive investigation of internet banking intentions and usage behavior can be conducted.

19. The study on usage intentions can be extended to corporate customers. Comparison can be made between individual customers and corporate customers to identify factors influencing their adoption decisions.
6.6 Conclusion

Internet banking is here to stay whether one likes it or not. It will become one of the most convenient ways of delivering financial services in the future. The main hindrances to its adoption by consumers are security concerns and the trustworthiness of such systems.

Internet banking and the traditional banking are not perfect substitutes. Certain banking transactions such as checking an account balance, transferring funds, paying bills and applying for credit cards do not actually require a personal contact or a large physical space and hence are well suited for delivery over the internet. On the other hand setting up a new account, applying for business loan, retirement planning, closing a mortgage or loan and any other complex transaction often require a person-to-person communication and existence of the bank physically.

Having much been presented on the internet banking sector, its total takeover of traditional bricks and mortar banking may not be possible and it is vital for banks at least in the present context to maintain both types of banking system.

Even though customers are beginning to accept multimedia banking it may not be easy to achieve this goal, as they are so much accustomed to the traditional way of conducting banking transactions. Nevertheless, given time, the internet banking trend would be a major component of the delivery channel in a few years as the younger generation are considered to be more technology savvy and old customers are learning to get used to the Internet banking.

Banks on the other hand has the responsibility of providing quality internet banking services with security, as the customers are
more security and quality conscious. Designing a comprehensive and advanced technological multimedia banking framework is also a vital aspect for banks to consider, due to the elements of competition. At present banks need to make consumers more aware of the facilities and benefits that internet banking could offer to customers like convenience, ease of use, usefulness, secure and the like.

Internet banking service providers must remember that customers will choose banks that provide easiest and fastest services with the right quality and security and continuous reassurance that their hard earned money is in the safest hands and cannot be mishandled by anyone else. Trust is all it takes. Building trust both on the bank and on the technology is important.

This study contributes to the literature by formulating and validating the extended Technology Acceptance Model to predict internet banking usage intention and thereby adoption. The findings provide useful information for bank management in formulating internet banking marketing strategies. It is also expected that these results help to extend the existing research boundaries and understand the practical implications for the ultimate development of banking in our country, a cornerstone for rendering stability to the economy.