THE INFLUENCE OF TECHNOLOGY ACCEPTANCE MODEL ON BEHAVIORAL INTENTION TO USE INTERNET BANKING SYSTEM

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A thesis submitted in fulfillment of the requirements for the award of the degree of Master of Science (Management-Technology)

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Dedicated to my beloved wife, Mother, Father, Mother in law and Father in law.
My sibling and all my friends for their support, encouragement and understanding.
Acknowledgement

In the name of Allah, the Most Beneficent, the Most Merciful. All praise and thanks to Allah, lord of the universe and all that exists. Prayers and peace be upon His prophet Mohammad, the last messenger of all humankind.

First I would like to express my sincere gratitude and thanks to Almighty ALLAH. I am deeply thankful to my parents for their continuous support and love throughout my study.

In preparing this thesis, I wish to express my sincere appreciation to my thesis supervisor, DR. INDA SUKATI, for encouragement, guidance, critics and friendship. Without his continued support and interest, this thesis would not have been the same as presented here.
ABSTRACT

One of the most notable and momentary development recently has been the introduction of Internet banking as a means of transacting business. One of such approach is the application of technology acceptance model (TAM) that encourages customers to imbibe internet banking. However, considering the slow pace of adoption of Internet banking in CIMB customers despite the awareness of internet banking and its advantage. This study investigated the likely factors that determine and explain consumer behavioral intention to use in internet banking system. Adopting a quantitative approach through a survey method, a total of 400 questionnaires were distributed to Student and staff in Universiti Teknologi Malaysia and 375 properly completed questionnaires were returned giving a response rate of 94.5%. The theoretical frameworks of Technology Acceptance Model (TAM) has been utilized extensively as a predictor of user acceptance in this study, based on an individual’s determination of perceived usefulness (PU), perceived ease of use (PEU) and perceive credibility (PC) of a specific technology. Overall, the outcome provides the paradigm that reveals positive significant factors that necessitates positive intention to use internet banking system. The implication therefore is that adopting internet banking system connotes a better means of accessing banking operation and ease transaction that devoid of time wastage & resources.
ABSTRAK

Salah satu perkembangan yang paling ketara dan seketika baru-baru ini telah memperkenalkan perbankan Internet sebagai satu cara urusan perniagaan. Salah satu daripada pendekatan itu adalah penggunaan model penerimaan teknologi (TAM) yang menggalakkan pelanggan untuk minum perbankan internet. Walau bagaimanapun, memandangkan kadar perlahan penggunaan perbankan Internet dalam pelanggan CIMB walaupun kesedaran tentang perbankan internet dan kelebihan. Kajian ini disiasat faktor-faktor yang yang menentukan dan menjelaskan niat tingkah laku pengguna untuk digunakan dalam sistem perbankan internet. Dengan mengambil pendekatan kuantitatif melalui kaedah tinjauan, sebanyak 400 soal selidik telah diedarkan kepada pelajar dan kakitangan Universiti Teknologi Malaysia dan 375 soal selidik yang lengkap telah dikembalikan memberi kadar respons sebanyak 94.5%. Rangka kerja teori Technology Acceptance Model (TAM) telah digunakan secara meluas sebagai peramal penerimaan pengguna dalam kajian ini, berdasarkan penentuan individu kegunaan dilihat (PU), mudah dilihat penggunaan (PEU) dan melihat kredibiliti (PC) daripada teknologi tertentu. Secara keseluruhaninya, hasil yang menyediakan paradigma yang mendedahkan faktor penting yang positif yang memerlukan niat yang positif untuk menggunakan sistem perbankan internet. Implikasinya itu adalah yang mengamalkan sistem perbankan internet maksud suatu cara yang lebih baik daripada mengakses operasi perbankan dan transaksi mudah yang tidak mempunyai masa & pembaziran sumber.
1 INTRODUCTION

1.0 Introduction 1
1.1 Research Background 5
1.2 Statement of problem 7
1.3 Objectives of the Study 10
1.4 Research questions 10
1.5 Scope of the Study 11
1.6 Structure of the Study 11
1.7 Significance of the Study 11
# LITERATURE REVIEW

## 2.0 Introduction

## 2.1 Internet Banking System: Definition

### 2.1.1 Definition of User Acceptance

## 2.2 Internet Banking Acceptance in the Developed Countries

## 2.3 Internet Banking Acceptance in the Developing Countries

### 2.3.1 Internet Banking Acceptance in Malaysia

*“Developing Country”*

## 2.4 Information System Acceptance Model

### 2.4.1 Theory of Reasoned Action Model (TRA)

### 2.4.2 Theory of Planned Behaviour Model (TPB)

### 2.4.3 Model of Personal Computer Utilisation (MPCU)

### 2.4.4 Motivational Model (MM)

### 2.4.5 Social Cognitive Theory (SCT)

### 2.4.6 Innovation Diffusion Theory (IDT)

### 2.4.7 Technology Acceptance Model (TAM)

## 2.5 Limitations of the Seven Previously Established Models

## 2.6 Behavioral Intention to Use Internet Banking System

## 2.7 Attitude towards Using Internet Banking System

## 2.8 Research Gaps in Internet Banking Literature

## 2.9 Conclusion

---

# RESEARCH METHODOLOGY

## 3.0 Introduction

## 3.1 Research Model

## 3.2 Research Design

## 3.3 Hypotheses

### 3.3.1 Hypotheses testing and Descriptive Analysis

## 3.4 Population and Sampling Procedures
4 DATA ANALYSIS

4.0 Introduction 59
4.1 The Profiles of Survey Respondents 61
4.2 Respondent’s Response of Technology Acceptance In Internet Banking 65
4.3 Respondent’s Response of Consumer Behavior Intention 68
4.4 Missing Data, Normality and Outliers 69
4.5 Factor Analysis 72
4.6 Reliability Analysis 75
4.7 Validity Analysis 76
4.8 Correlations analysis 77
4.9 Hypotheses testing 79
4.10 Model analysis 82
4.11 Conclusion 84
SUMMARY OF FINDING AND CONCLUSION

5.0 Introduction 85
5.1 Finding 85
5.2 Research implication 87
5.3 Contribution to Knowledge 89
5.4 Limitation 90
5.5 Future Research 91
6.6 Conclusion 92

REFERENCES 93
APPENDIX 125
<table>
<thead>
<tr>
<th>TABLE NO</th>
<th>TITLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Internet Banking Service in Malaysia</td>
<td>3</td>
</tr>
<tr>
<td>1.2</td>
<td>Chronological summary of Significant Factors Affecting Internet Banking Acceptance and various researchers from 2000-2012</td>
<td>13</td>
</tr>
<tr>
<td>2.1</td>
<td>Internet Banking Acceptance in European Countries</td>
<td>18</td>
</tr>
<tr>
<td>2.2</td>
<td>Summary of Established Models and Theories of Technology Acceptance</td>
<td>33</td>
</tr>
<tr>
<td>3.1</td>
<td>Determining Sample Size</td>
<td>45</td>
</tr>
<tr>
<td>3.2</td>
<td>Past researchers and applied questionnaires for data extraction</td>
<td>47</td>
</tr>
<tr>
<td>3.3</td>
<td>Likert Scale for section B</td>
<td>50</td>
</tr>
<tr>
<td>3.4</td>
<td>Research instrument</td>
<td>52</td>
</tr>
<tr>
<td>4.1</td>
<td>Questionnaire Response Rate</td>
<td>60</td>
</tr>
<tr>
<td>4.2</td>
<td>Profiles of respondents (n = 375)</td>
<td>62</td>
</tr>
<tr>
<td>4.3</td>
<td>How long the respondents banking with CIMB</td>
<td>64</td>
</tr>
<tr>
<td>4.4</td>
<td>Customers’ Rating on CIMB bank service</td>
<td>64</td>
</tr>
<tr>
<td>4.5.1</td>
<td>Respondent’s Response of perceived usefulness (n=375)</td>
<td>65</td>
</tr>
<tr>
<td>4.5.2</td>
<td>Respondent’s Response of perceived ease of use (n=375)</td>
<td>66</td>
</tr>
<tr>
<td>4.5.3</td>
<td>Respondent’s Response of perceived credibility (n=375)</td>
<td>67</td>
</tr>
<tr>
<td>4.6</td>
<td>Respondent’s Response of Consumer Behavior Intention (n=375)</td>
<td>68</td>
</tr>
<tr>
<td>4.7</td>
<td>Skewness and Kurtosis</td>
<td>71</td>
</tr>
<tr>
<td>4.8</td>
<td>Total Variance Explained</td>
<td>73</td>
</tr>
<tr>
<td>4.9</td>
<td>KMO and Component Matrix</td>
<td>73</td>
</tr>
<tr>
<td>4.10</td>
<td>Items Dropped</td>
<td>73</td>
</tr>
<tr>
<td>4.11</td>
<td>Component Matrix</td>
<td>74</td>
</tr>
<tr>
<td>4.12</td>
<td>Reliability Test</td>
<td>76</td>
</tr>
<tr>
<td>4.13</td>
<td>Correlations analysis</td>
<td>78</td>
</tr>
<tr>
<td>4.14</td>
<td>Model Summary for Multiple Regressions</td>
<td>80</td>
</tr>
<tr>
<td>4.15</td>
<td>ANOVA</td>
<td>80</td>
</tr>
<tr>
<td>4.16</td>
<td>Regression coefficient</td>
<td>80</td>
</tr>
<tr>
<td>5.1</td>
<td>Result of the hypotheses</td>
<td>86</td>
</tr>
</tbody>
</table>
# List of Figures

<table>
<thead>
<tr>
<th>Figure No</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Diffusion of Innovation Model</td>
<td>30</td>
</tr>
<tr>
<td>2.2</td>
<td>Modified Technology Acceptance Model</td>
<td>31</td>
</tr>
<tr>
<td>3.1</td>
<td>Proposed Research framework</td>
<td>42</td>
</tr>
<tr>
<td>3.2</td>
<td>Research Design</td>
<td>43</td>
</tr>
<tr>
<td>4.1</td>
<td>Monthly Salary (Us-$) of Respondents</td>
<td>63</td>
</tr>
<tr>
<td>4.2</td>
<td>Histogram Regression Standardize Residual</td>
<td>69</td>
</tr>
<tr>
<td>4.3</td>
<td>Normal P-P plots</td>
<td>70</td>
</tr>
<tr>
<td>4.4</td>
<td>Scatter plot of Regression</td>
<td>72</td>
</tr>
<tr>
<td>4.5</td>
<td>The Final Model (Standard Coefficient beta)</td>
<td>81</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td>BAFIA</td>
<td>Banking and Financial Institution Act</td>
<td></td>
</tr>
<tr>
<td>May Bank</td>
<td>Malaysian Bank Berhad</td>
<td></td>
</tr>
<tr>
<td>HLB</td>
<td>Hong Leong Bank</td>
<td></td>
</tr>
<tr>
<td>RHB</td>
<td>Rashid Hussain Bank Berhad</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>Am Bank Berhad</td>
<td></td>
</tr>
<tr>
<td>BNM</td>
<td>Bank Negara Malaysia</td>
<td></td>
</tr>
<tr>
<td>TAM</td>
<td>Technology Acceptance Model</td>
<td></td>
</tr>
<tr>
<td>IDT</td>
<td>Innovation Diffusion Theory</td>
<td></td>
</tr>
<tr>
<td>BAI-BCG</td>
<td>Bank Administration Institute-The Boston Consulting Group</td>
<td></td>
</tr>
<tr>
<td>PEU</td>
<td>Perceived Ease of Use</td>
<td></td>
</tr>
<tr>
<td>PU</td>
<td>Perceived Usefulness</td>
<td></td>
</tr>
<tr>
<td>PU</td>
<td>Perceive Credibility</td>
<td></td>
</tr>
<tr>
<td>ICT</td>
<td>Information Communication Technology</td>
<td></td>
</tr>
<tr>
<td>WWW</td>
<td>World Wide Web</td>
<td></td>
</tr>
<tr>
<td>BI</td>
<td>Behavioral Intention</td>
<td></td>
</tr>
<tr>
<td>UAE</td>
<td>United Arab Emirates</td>
<td></td>
</tr>
<tr>
<td>TRA</td>
<td>Theory of Reasoned Action</td>
<td></td>
</tr>
<tr>
<td>TPB</td>
<td>Theory of Planned Behaviour</td>
<td></td>
</tr>
<tr>
<td>MPCU</td>
<td>Model of Personal Computer Utilisation</td>
<td></td>
</tr>
<tr>
<td>MM</td>
<td>Motivational Model</td>
<td></td>
</tr>
<tr>
<td>SCT</td>
<td>Social Cognitive Theory</td>
<td></td>
</tr>
<tr>
<td>IDT</td>
<td>Diffusion of Innovation Model</td>
<td></td>
</tr>
<tr>
<td>IS</td>
<td>Information System</td>
<td></td>
</tr>
<tr>
<td>ATM</td>
<td>Automated Teller Machines</td>
<td></td>
</tr>
<tr>
<td>UTM</td>
<td>University Technology Malaysia</td>
<td></td>
</tr>
<tr>
<td>CIMB</td>
<td>Commerce Investment Merchant Bank</td>
<td></td>
</tr>
<tr>
<td>EFA</td>
<td>Exploratory Factor Analysis</td>
<td></td>
</tr>
<tr>
<td>IBT</td>
<td>Internet Banking Technology</td>
<td></td>
</tr>
<tr>
<td>CBINTO</td>
<td>Consumer Behavioral Intention to Use Internet Banking System</td>
<td></td>
</tr>
<tr>
<td>KMO</td>
<td>Kaiser, Meyer-Olkin</td>
<td></td>
</tr>
</tbody>
</table>
# LIST OF APPENDIX

<table>
<thead>
<tr>
<th>APPENDIX</th>
<th>TITLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>QUESTIONNAIRE</td>
<td>125</td>
</tr>
</tbody>
</table>
CHAPTER 1

INTRODUCTION

1.0 Introduction

Internet banking is considered as an online banking revolution of the traditional banking services which offers customers the greatest usefulness to perform banking transactions through the Internet (Furst et al., 2002; Ratnasingam, Gefen, & Pavlou, 2005; Yakhlef, 2001; Yuen, 2010). Most of the banks, especially the large banks and mutual banks, have slowly increased their number of Internet banking services available to target customers over the past several decades (Ratnasingam et al., 2005; Rayport & Sviokla, 1994; Yuen, 2010). The most prevalent 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 (Yang, Whitefield, & Bhanot, 2005; Yuen, 2010).

Internet banking is either offered as a value added service of physical bank branches or a virtual bank where target customers can only perform banking transactions via the Internet (Furst et al., 2002). The operating costs of a virtual bank are much lower compared to traditional banks (Bankers Online, 2003). However, if the customers face problems in using Internet banking services, they cannot go to the
local branches and complain to the manager face-to-face. Instead, they have to contact representatives of the virtual bank (Furst et al., 2002; Yuen, 2010).

The practices of internet banking in Malaysia that allowed Malaysian banks to establish Internet banking services starting 1st June 2000 (Hamid et al., 2007). Banking and Financial Institution Act 1989 (BAFIA) and Islamic Banking Act 1983 allowed licensed banks to offer Internet banking services in Malaysia (Hamid et al., 2007). To date, there are 13 bank institutions in Malaysia offering Internet banking services (Hamid et al., 2007).

Detailed reviews on Internet banking services of top five banking institutions in Malaysia, Malaysian Banking Berhad (MayBank), Hong Leong Bank (HLB) Berhad, Rashid Hussain Bank Berhad (RHB), Am Bank (M) Berhad (Am Bank) and Public Bank Berhad (Public Bank) are displayed in Table 1.1. The results revealed that MayBank topped the other banks in Malaysia for being the most excellent Internet banking services providers in offering various types of informational, communicative and transactional Internet banking services. Banks that provide Internet banking services in Malaysia are still lagging from offering web shopping services.
<table>
<thead>
<tr>
<th>Internet Banking Services and features</th>
<th>May Bank</th>
<th>HLB</th>
<th>RHB</th>
<th>Am bank</th>
<th>Public Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Informational Internet Banking Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Language choice</td>
<td>No</td>
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<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>2. Internet banking demonstration</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>3. Comprehensive FAQ</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>4. Internet banking transaction time</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Transactional Internet Banking Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Local fund transfer</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>6. International fund Transfer</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>7. Third party account transfer</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>8. Utility payment</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>9. Cheque request</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>10. Savings and current account management</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>11. Loan and mortgage Application</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>12. Loan and mortgage Repayment</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>13. Account balance Viewing</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>14. Request for bank statement</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>15. Fixed deposit</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>16. Stop cheque</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>17. Direct debit</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>18. Credit and debit card application</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>19. Credit and debit card payment</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>20. Historical records</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>21. Internet phone Banking</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>22. Internet shopping</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>23. Change user id and password</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Communicative Internet Banking Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. E-mail support</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>25. Internet business</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>26. Internet investment</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>27. Internet insurance</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>28. Internet application form</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>29. Internet Islamic Banking</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Notes: *yes – service is available ** - service is not available
Source: Adapted from Hamid, Amin, Lada & Ahmad, 2007; Yuen, 2010
Although most Malaysian banks might intend to use information technology on internet banking to obtain strategic advantages, Clemons (1986); Khairul (1999) assert that achieving or sustaining technology advantages is difficult. Once customers accept one of form internet banking information technology, other banks are quickly to follow the technology acceptance. It appears that information technology in internet banking system enable system quickly become survival issue if banks not keeping up with the technology innovation (Khairul,1999). The new internet banking technologies were introduced was not easy for people to accept until they feel too secure about its use. It needs special step by step process to make the new technology able to be accepted by people.

Technology acceptance model (TAM) on internet banking system proposes that perceived ease of use and perceived usefulness of technology are predictors of user attitude towards using the technology, subsequent behavioral intentions and actual usage. Perceived ease of use was also considered to influence perceived usefulness of technology. In TAM, perceived usefulness refers to the degree to which the user believes that using the technology will improve his or her work performance, while perceived ease of use refers to how effortless he or she perceives using the technology will be. Both are considered distinct factors influencing the user’s attitude towards using the technology, though perceived ease of use is also hypothesized to influence perceived usefulness and attitude towards using the technology (A. Sanayei & A. Ansari, 2010).

Wu (2005) explored the adoption of customer relationship management systems by integrating aspects of Davis’ (1989) technology acceptance model (TAM) with Roger’s (Roger, 1995) innovation diffusion theory (IDT). Their model includes factors to measure both IDT and TAM. The IDT factors include innovation, task, individual, organization, and environment. To measure innovation, they used relative advantage, compatibility, complexity, observability, and trialability using an instrument developed by Moore and Benbasat (Moore & Benbasat, 1991; (A. Sanayei & A. Ansari, 2010). The concept of technology acceptance for this study is derived from the Technology Acceptance Model (TAM), which was developed by David in 1986. TAM was first developed in the discipline of social psychology and
specifically was meant to provide an explanation, prediction, and identification of the determinants of computer acceptance or explanation of why a particular system was unacceptable (Davis, Bagozzi, & Warshaw, 1989). It provides theoretical linkages among users’ internal beliefs, attitudes, intention, and usage behavior, to determine how individuals accept or reject a new technology (Davis, 1989; Yanika, 2000)). This study focus on technology acceptance model (TAM) on internet banking system and its relationship to banking customer behavioral intention to use internet banking system. TAM in this study focus on perceived usefulness, perceive ease of use and perceived credibility (Venkatesh & Davis, 1996).

1.1 Research Background

Technology in Internet banking system has been conducted to computerize essential bank process since 1960s (Eriksson, Kerem, & Nilsson, 2005; Yuen, 2010). Internet banking technology is started by Security First Network Bank in the United States in 1995 (Gandy, 1995; Liao, Shao, Wang & Chen, 1999). One year later, it is introduced in Estonia (Eriksson et al., 2005) and South Africa (Singh, 2004), followed by Australia in 1997 (Sathye, 1999), Turkey in 1997 (Polatoglu & Ekin, 2001), Singapore in 1997 (Gerrard & Cunningham, 2003), China in 1997 (Laforet & Li, 2005), England in 1998 (White & Nteli, 2004), Hong Kong in 1999 (Wan, Luk, & Chow, 2005), Romania in 1999 (Gurau, 2002), Thailand in 1999 (Jaruwachirathanakul & Fink, 2005) and Malaysia in 2000 (Bank Negara Malaysia, 2009). Enhanced technology is deployed to enable the banking industry to offer their services via the Internet (Yuen, 2010).

Liao & Cheung, 2002, revealed that technology acceptance in Internet banking witnessed increment in the number of usage since 2000. As Internet access exceeded 1.596 billion people globally in the first quarter of 2009 (Internet World Stats, 2009; Yuen, 2010), an increasing number of banks worldwide have increased their business investments in Internet banking technology driven by the expectation that the Internet banking technology would provide better opportunities to establish a distinctive strategic position compared to other traditional forms of banking services.
Internet banking is particularly well-practiced in the developed countries such as Korea, Spain, and Austria, where more than 75 percent of all banks offer transactional services via the Internet (Maenpaa, 2006). The development of the Internet banking as a service and marketing channel has breached the geographical and industrial barriers, creating new products, services and market opportunities (Liao & Cheung, 2002; Yuen, 2010).

Technology in Internet banking is used to help banks deliver services and products better, faster, and cheaper compared to traditional bank services. Internet banking system enables target customers to look around essential bank products and services through their personal computers (Polatoglu & Ekin, 2001) thus allows target consumers to perform banking transactions over the Internet anywhere and anytime (Polatoglu & Ekin, 2001, Yuen, 2010). There are three basic types of Internet banking services, the informational, communicative and transactional Internet banking services (Bank Indonesia, 2004; Reserve Bank of India, 2007; Yuen, 2010).

Finally, the global acceptance of TAM as a result of the presence of basic infrastructural facilities, education autonomous, establishment of various research institutes, improved economic standard, increase awareness, positive attitudinal behaviour to international students in Malaysia orchestrated the research impetus. The choice of respondent for this study is borne out of the passion for the influx of the international students to Malaysia and their survival in term of banking transaction as they depends primarily on money transfer through internet banking system from their various countries for their sustenance. However, the effectiveness of internet banking from their respective countries is not in the scope of this study but their behavioural intent of using internet banking system at their destination (Malaysia). The lopsidedness in internet banking system usually in the third World Countries have proven to have negative influence on the intention to use therefore the premise of this study will substantiate the veracity of behavioural intention to use internet banking in CIMB Bank, Malaysia.
1.2 Statement of problem

The study of information technology acceptance in internet banking system within the context of developing countries, such as Malaysia, is even more scarce. Almost all studies on internet banking technology acceptance were conducted in developed countries, such as Australia (Arthur, 1989; Marr & Prendergast, 1990; Prendergast & Marr, 1994), Europe (Child & Loveridge, 1990; Preece, 1995), and the US (Bank Administration Institute-The Boston Consulting Group (BAI-BCG), 1995; Hannan & McDowell, 1984; Morone & Berg, 1993), therefore, Malaysia and other Asian countries should abridge this dichotomy judging from their heavy spending on information technology (Leung & Johnson, 1996). Malaysian banks have spent a lot of resources on information technology, especially since 1991 (BNM, 1995). Although BNM (1995) has pointed out that most of these spending were on automated retail banking operation, little is known about what triggered this bank’s decision to adopt information technology (Leung & Johnson, 1996).

Technology acceptance, defined as the extent to which an individual believes that utilizing a specific system will enhance job performance (Davis, 1989). Because our lives today are governed to a large extent by complex technologies creation and comprehension of circumstances that facilitate individual’s embracing information technology continues to be an issue of high priority (Venkatesh & Davis, 2000; Bandura, 2002). In an era that is highly dependent on technology, many organizations are turning to virtual interface as either the principal or even the sole point of customer contact (Balasubramanian, Konana & Menon, 2003). The banking industry has been equally affected by the significant impact technology has made on service delivery (Durkin, 2004). It is no surprise then that technology revolutionized this industry (Moutinho & Meidan, 1989), and this impact will continue to increase over the next decade (Durkin, 2004).

Technology changed the intrinsic nature of internet banking services and relationships (Siaw, & Yu, 2004); pushed financial institutions to search for new ways to deliver services to consumers (Lee, Kwon, & Schumann, 2005); and revolutionized the banking industry, thus causing a paradigm shift from the
traditional branch banking to e-banking system with its challenges, opportunities and the impact on service delivery (Souranta, Mattilla, & Munnukka, 2005). Further to this point, the advent of the Internet served to further propel the banking industry into the arena of virtual interactions, making a significant impact on service provision (Hirtle & Metli, 2004).

Technology acceptance model (TAM) has been customized to model an internet banking acceptance of technology. The main purpose of TAM is to; a) explicate the factors that determine computer acceptance in a manner that is general, b) explain behavior across a wide array of end users computing technologies and user populations (Chan & Lu, 2004), and c) retain its meanness while warranting theoretical justification (Davis, et al., 1989). The theoretical framework of TAM has been utilized extensively as a predictor of user acceptance, based on an individual’s determination of perceived usefulness (PU), perceived ease of use (PEU) and perceive credibility (PC) of a specific technology (Adams, Nelson, & Todd, 1992). TAM encompasses participative or situational, as well as intrinsic features of involvement with an IT system (Jackson, et al. 1997).

According to Moorman, Zaltman & Deshpande, (1992); Shumaila et., (2009) perceived credibility refers to user keenness to rely on internet banking service provider by taking into consideration the bank’s reliability. However, this study defines perceived credibility as the bank user trust in providing sensitive information while using technology in internet banking service.

TAM explores factors affecting computer acceptance in a manner that is general, and explains computer users within a wide array of populations who engage in a broad range of computer technologies; TAM is at the same time theoretically justified and parsimonious (Davis, Bagozzi, & Warshaw, 1989). TAM provides a platform for tracing the effects that external factors have on individuals’ internal beliefs, attitudes, and intentions such as perceive ease of use (PEU), perceived usefulness (PU) and perceive credibility (PC) as it relates to technology acceptance.
Davis (1989) introduced and established the soundness of a new scale to measure the constructs of perceived usefulness (PU) and perceive ease of use (PEU). PU refers to an individual’s belief that use of a particular technology leads to enhanced performance, whereas PEU is the belief that use of a determined technology will be effortless (Davis, et al., 1989). According to Wang (2003) TAM suggests three beliefs, which consist of perceived usefulness, perceived ease of use and the perceived credibility. To the extent that one technology is easier to use than another, it will probably be more accepted by users (Davis, 1989).

The extent to which a user believes a particular technology will be an enhancement to his or her task is defined as perceived usefulness (PU) (Venkatesh, 2000), and is based on the users’ subjective perceptions. Perceived Ease of use determines the extent to which a person perceives use of a technology to be effortless. PU, PEU and PC are considered antecedents to TAM. These two variables play an important role in an individual’s decision to adopt technology (Plouffe, Hulland, & Vandenbosch, 2001). This study focus on perceive usefulness (PU), perceive ease of use (PEU) and perceive credibility (PC).

Since Davis’s (1989) development of TAM, numerous researchers have extended the model to examine World Wide Web (WWW) acceptance (Glassberg, 2002); users’ perception of resources (Mathieson, Peacock, & Chin, 2001); effect of computer attitude and self-efficacy on actual use (Chau & Hu, 2001); single and multifunction technologies (Taylor & Todd, 1995); users’ perception of resources (Szajna, 1996); computer playfulness (Moon & Kim, 2001); cognitive absorption (Agarwal & Karahana, 2000); and perceived enjoyment and product development (Koufaris, 2002).

Internet banking technologies application in developing countries especially in CIMB Bank Malaysia has not been sufficiently explored (Molla and Heeks, 2006). Considering the limited research in internet banking system information technology application in developing countries, one might ask whether the results from research conducted in developed countries are applicable to developing nations. Dewan & Kraemer (2000) argue that study related to information technology application in
internet banking system findings from developed countries are not directly transferable to developing countries (Dewan and Kraemer, 2000; Duncombe and Molla, 2006) and that differences in country-contexts can lead to different ICT use and impact patterns (Clarke, 2007).

1.3 Objectives of the Study

The main objectives of this study is to examine the impact of internet banking technology acceptance on behavioral intention to use internet banking system. In more detail, the objectives of this research are as follow:

(a) To examine impact of perceived usefulness of internet banking technology on behavioral intention.

(b) To evaluate the impact of Perceived ease to use internet banking technology on behavioral intention.

(c) To investigate the impact of perceived credibility of internet banking technology on behavioral intention.

1.4 Research questions

(Q1) Is there any impact of perceived usefulness of internet banking technology on behavioral intention to use internet banking system?

(Q2) Is there any positive impact of Perceived ease to use internet banking technology on behavioral intention to use internet banking system?

(Q3) Is there any impact of perceived credibility of internet banking technology acceptance on behavioral intention to use internet banking system?
1.5 Scope of the Study

This research focuses on internet banking technology acceptance and behavioral intention to use internet banking system in Malaysian banking industry, especially on CIM Bank in UTM Skudai Johor Bahru. The objective of this study focused on perceived usefulness (PU), perceived ease of use (PEU) and perceived credibility (PC) of technology acceptance as independent variables and behavioral intention (BI) to use internet banking system as dependent variable.

1.6 Structure of the Study

This proposal consists of five chapters. The first chapter introduced the background of study, research problems, and objectives, significance of the study, scope of the study and limitation of the study. Chapter 2 reviews related literature, Chapter 3 presents the conceptual framework and method adopted in collecting data for the study while chapter 4 deals extensively with data analysis, data stratification and interpretation, finally, chapter 5 comprises of detail summary of findings based on result of each hypotheses, research implication contribution to knowledge, research limitation, future research and conclusion.

1.7 Significance of the Study

Technology acceptance in Internet banking system is considered as one of efficient marketing channels that allows banks to extend their customer base, is of no use for banks to invest in technology in Internet banking if the technology are not accepted by their target customers (Bhattacherjee, Perols, & Sanford, 2008; Jih, 2002; Yuen, 2010). Consequently, it is important for banks to understand the important factors that lead to the acceptance of technology in Internet banking services. This would help banks to maximise return on their investments and maintain a competitive advantage (Eriksson et al., 2005; Polatoglu & Ekin, 2001).
Most studies on technology acceptance on internet banking system focused narrowly on the positive aspects of Internet banking services. For example, AbuShanab and Pearson (2007), Eriksson et al. (2005), Polatoglu and Ekin (2001), Um rani and Ghadially (2008) and Yazan (2008) focused on the effects of trust, relative advantage and attitude toward using Internet banking services. Other studies mainly concentrated on the influence of perceived security on Internet banking acceptance (Bandyopadhyay, 2009; Dauda & Santhaparraj, 2008; Khalil & Pearson, 2007). Literature such as Gerrard and Cunningham (2003) and Saythe (1999) did not test the validity and reliability of constructs. Sathye (1999) stated that 70 percent of customers were concerned about the security of using Internet banking services and Gerrard and Cunningham (2003) identified economic benefits of Internet banking acceptance without providing further statistical analysis to confirm the reliability and validity of the collected data. In this research study, therefore, the examination of the influence of TAM on behavioural intention to use internet banking system were carried out. Please refer to Chapter 2 (Section 2.8) of this thesis for further details.

Most of Internet banking studies focused on specific countries such as Australia (Lichtenstein & Williamson, 2006; Sathye, 1999; Yeow, Yuen, Tong, & Lim, 2008), Malaysia (Dauda & Santhaparraj, 2007; Yeow & Yuen, 2008; Yuen, 2010) Singapore (Gerrard & Cunningham, 2002; Liao & Cheung, 2002), Finland (Pikkarainen, Pikkarainen, Karjaluoto, & Pahnila, 2004) and Taiwan (Jih, 2002).

This study contributes to Internet banking literature by developing a Technology acceptance model (TAM). The expected finding of this research is to adds to the knowledge base on technology acceptance in Internet banking on behavioral intention to use internet banking system. From the perspective of bankers, it is desirable to shift customers from bank branches to Internet banking as the automation of banking services can save operational costs and value added online insurance and mortgage services can create greater business opportunities (Ravi et al., 2001; Yeun, 2010).
**Table 1.2  Chronological summary of Significant Factors Affecting Internet Banking Acceptance and various researchers from 2000-2012**

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<th>N</th>
<th>Significant Factors</th>
<th>Literature</th>
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<td>1*</td>
<td>Customer Behavioral Intention to Use Internet Banking</td>
<td>Davis, 1989; Black et al., 2001; Karjaluoto et al., 2002; Shih &amp; Mohezar et al., 2007; Dinev Fang, 2004; Khalil &amp; Pearson, 2007; et al., 2009; Zolait et al., 2009; Alsajjan, B. et al., 2010.</td>
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<tr>
<td>2*</td>
<td>Perceived Usefulness</td>
<td>Schunk, 2000; Lim, 2001; Eastin, 2002; Wang et al., 2003; Chan and Lu, 2004; Ndubisi, 2005; Martinez, 2006; Dinev et al., 2009.</td>
</tr>
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<td>8</td>
<td>Effort Expectancy</td>
<td>Evans &amp; King, 1999; Joseph et al., 1999; Hechinger 2001; Jun &amp; Cai, 2001; Mateos et al., 2001; Howcroft et al., 2002; Ma’ruf et al., 2002; Ramayah et al., 2003; Wang et al., 2003; AlSukkar, 2005; Ndubisi, 2005; Yang et al., 2005; Foh &amp; Treiblmaier, 2006; Guriting &amp; Ndubisi, 2006; Miranda et al., 2006; Wu et al., 2006; AbuShanab &amp; Pearson, 2007; Chen &amp; Barnes, 2007; Hernandez &amp; Mazzon, 2007; Kholoud, 2007; Gounaris &amp; Koritos, 2008; Yazan, 2008; Karjaluoto et al., 2009. Wang, H. Y. et al., 2010. Im, I., Hong, S. et al., 2011.</td>
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*adopted by researcher, 2013
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http://encarta.msn.com/dictionary_701706860/Internet banking.html [2007, October 5].


