# Adoption and Diffusion of Electronic Banking by Customers: Critical Analysis of Empirical Evidences

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Abstract

Electronic banking is the new trend significantly adopted by banking sector worldwide due to its wider scope for the customers as well as banks at large. It has potential to hold great promises for bankers to grab huge business opportunities. In the present study, the diverse literature available worldwide on the adoption and diffusion of e banking has been explored to identify the significant constructs which enable innovation to diffuse among the customers and ultimately lead to its adoption. Its main purpose is to understand the trend of various research aspects prevailing in the field of banking and related to the adoption of innovative services by customers. In order to review the relevant literature, research papers have been collected from the referred journals related to innovation, marketing and banking. Qualitative approaches have been used in order to analyse and compare the main findings as well as applicability of the research papers. Hence, using an interpretative and critical approach through content analysis of the studies reviewed, the important measures viz. Research Methodology, Sample size, Respondents' profile, Model applied and Significant Constructs have been taken into account for further inquiry. This study builds up a strong conceptual framework for the researchers by thoroughly analyzing the empirical studies of last 11 years i.e. from 1999 to 2009 which further links the consumers' perceptions and orientation to practical implications.

**Keywords**:
Adoption and Diffusion Models, Electronic banking, Technology, Literature Review, Content Analysis

**JEL Classification:** G2, O33, R150

## 1. Introduction

Innovations can be seen in almost every sector whether it is related to Agriculture, Tele-communications, Information Technology, Banking or any other sector. Now a days, Innovations have become necessary to upgrade the standard of an individual, a particular institute as well as a society at a large as the innovations have tendency to make the things easier and play a crucial role in improving efficiency & productivity. However, scientific research and novel technologies deliver real benefits only when innovators appropriately apply them to improve the lives of ordinary people (Melnick and Melnick, 2007).

### 1.1 Electronic Banking: A Paradigm Shift in Industry

As information technology becomes more and more sophisticated, banks in many parts of the world are adopting a multiple-channel strategy to approach their customers through innovative products and services. Also, the right mix of banking channels depends not only on the channel characteristics, but also the preferences of the consumers within a particular market (Wan et al., 2005). Thus, these new enhancements and its acceptance have shifted the banks' interest from product centric to customer centric. Electronic banking can be seen as one of that advantageous change.

The products of E-Banking viz. Internet Banking, Plastic Cards, Electronic fund transfer, Mobile Banking etc. are known for its unique features like more speed to conduct transactions, universal applicability, lesser financial cost etc. Hence, Electronic banking is the new trend significantly adopted by banking sector worldwide due to its wider scope for the customers as well as banks at large which hold great promises for them to grab huge business opportunities.

The main focus of the study is to identify the important constructs leading to the adoption of e banking by customers through critically analyzing the available literature. For this purpose, the present study has been arranged in five sections. Section I explains the introductory part, Section II describes the research design of the study comprising its objectives and methodology, Section III reviews the previous literature while Section IV presents the critical analysis and findings of the study. Last but not the least, in Section V, describes Recommendations and Implications of the study.

## 2. Research Design

### 2.1 Objectives of the Study

In this present study, an attempt has been made to explore the diverse literature available on the innovation in banking sector worldwide. The specific objectives of the study are:

1. To identify the significant constructs which enable innovation to diffuse among the customers and ultimately lead to its adoption.
2. To understand the trend of various research aspects prevailing in the field of banking related to the adoption of innovative services by customers through academic research papers.

### 2.2 Sources and Methodology

In order to review the relevant literature, research papers have been collected from the referred journals related to innovation, marketing and banking viz. International Journal of Bank Management, European Journal of Innovation Management, Internet Research, Journal of Product & Brand Management, Journal of Marketing Research from Emerald, Technovation, Technological Forecasting and Social Change from Science Direct, Journal of Consumer Research from JSTOR and Journal of Internet Banking and Commerce. These journals provide the admirable work of various scholars worldwide which ultimately help the researchers to conduct their work in a convenient manner.

The specific criteria followed for selecting the articles as empirical support for review purpose is as follows:

1. The articles which explore the factors influencing adoption of banking services by customers.
2. The articles in which one of the four models or other additional factors driving the adoption of innovation or both has been applied.

The focus of the study is to also integrate the application of innovation diffusion theories in banking industry worldwide. Qualitative approaches to study these papers have been used in order to analyse and compare their main findings and applicability of the research papers. Since, qualitative method is always useful for inductive and exploratory research as it leads to the understanding of phenomenon and theory generation particularly where human behaviour and functions are concerned (Read, 2000). Using an interpretative and critical approach through content analysis of the studies reviewed, the important measures viz. Research Methodology, Sample, Respondent Profile, Model applied and Significant Constructs have been taken into account for further inquiry. This study builds up a strong conceptual framework for the researchers by thoroughly analyzing the empirical studies of last 11 years i.e. from 1999 to 2009 which further links the consumers' perceptions and orientation to practical implications.

## 3. Review of Literature

The dynamics of innovation in service firms are of particular interest for the overall discussion around the adoption of new technology as most of people believe that we are now in a new economy where the rapid diffusion of IT has dramatically altered the economic landscape we live in (Khan, 2004). The diffusion research approach is one of the way to observe the changes took place and its impact arising out of the adoption of innovation. Hence the diffusion research has been taken up in a variety of fields: education, anthropology, banking, medical sociology, marketing, geography etc. Each of these disciplines pursued diffusion research in its specialized way and for some time without much interchange with the other diffusion research traditions (Rogers, 1976).

### 3.1 Adoption and Diffusion of Innovation

Diffusion is the process through which the innovation is spread across the ultimate users. It includes all those activities which ultimately help the innovation to reach to the social system by various communication channels (Rogers, 1995). Diffusion theories also suggest that there are certain characteristics of adopters like socio economic as well as demographic which represent the innovativeness

of individual and thus lead to adoption of technology (Ozdemir et al., 2008; Rogers, 1995).

Various models and theories have been developed by prominent scholars regarding innovation and diffusion of technology among individuals and within the organization. Among these the widely used models are Innovation Diffusion Model, Technology Acceptance Model, Theory of Reasoned Action and Theory of Planned Behaviour. All these models have tried to identify specific variables or characteristics which tend to affect the adoption and diffusion of new product or service.

In simple words, these diffusion theories provide tools, both quantitative and qualitative, for assessing the likely rate of diffusion of a technology and also identify the various factors which facilitate or hinder technology adoption and implementation. These factors have been explained briefly in Table 1.

The factors are being categorized on the basis of Innovation's Features, Social Factor, Individual Behavior and organizational features. As shown in Table 1, The Innovation Diffusion Model and Technology Acceptance Model given by Rogers and Davis respectively have primarily emphasized on the characteristics of innovations as the key inhibitors and exhibitors influencing the adopters' decision towards the innovation. Also, the diffusion of innovation models proposed by Rogers and Davis are widely supported and complementary as well. Davis's two main variables viz. perceived usefulness and perceived ease of use can fit well with two of the five factors of Rogers model i.e. Relative Advantage and Complexity respectively (Alaghebad, 2006). On the other hand, Theory of Planned Behavior and Theory of Reasoned Action have highlighted the individual behavior and his perceptions towards the innovation as main factors to influence decision of adoption or rejection. Hence, the key constructs in the innovation-decision process are the innovation's perceived attributes, the individual's attitude and beliefs, and communications received by the individual from his/her social environment about the innovation (Karahanna et al., 1999). Organizational factors like organizational support and learning, its performance and market exposure etc. too influence the customer's decision as these ultimately help the product/services to reach to the potential user.

**Table 1. Factors influencing the decision to adopt the innovation**

| *Model* | *Factors* | *Explanation* | *Category* |
|---|---|---|---|
| Innovation Diffusion Model ( Rogers Model) | Relative Advantage | The degree to which the available product or service is perceived as more beneficially by adopter comparative to other alternatives. | Innovation's Feature |
| | Compatibility | The degree to which an innovation is perceived being fits to the style, needs values and experiences of the potential adopter. | Innovation's Feature |
| | Complexity | The extent to which the innovation is easy to use and understandable for the adopter | Innovation's Feature |
| | Trailability | The degree to which an innovation may be experimented by the users with on a limited basis prior committing to its actual usage | Innovation's Feature |
| | Observability | The level to which the results of innovation are visible to others in social system. | Innovation's Feature |
| Theory of Planned Behaviour and Reasond Action (TPB & TRA) | Behavioral Beliefs/ Attitude | An individual's belief about consequences of particular behavior. | Individual Behaviour |
| | Normative Beliefs/ Subjective norms | An individual's perception about the particular behaviour, which is influenced by the judgment of significant others (e.g., parents, spouse, friends, teachers). | Social factor |
| | Control Beliefs/ Behavioral intention | An individual's perceived ease or difficulty of performing the particular behavior in actual. | Individual Behaviour |
| Technology Acceptance Model | Perceived Usefulness | The degree to which a person believes that using a particular system would enhance his or her job performance | Innovation's Feature |

| Model | Factors | Explanation | Category |
|---|---|---|---|
| | Perceived Ease-of-Use | The degree to which a person believes that using a particular system would be free from effort. | Innovation's Feature |
| Additional Factors | Self Efficacy | People's beliefs about their capabilities to produce designated levels of performance. | Individual Behaviour |
| | Image | The degree to which using an innovation is perceived to enhance one's image or status in one's social system. | Individual Behaviour |
| | Result Demonstrability or Visibility | The degree to which the innovation is visible or communicable to others. | Innovation's Feature |
| | Organisational Support and Learning | The degree to which the organization is supportive to the individuals while using the innovation. | Organisational Features |
| | Perceived Riskiness | A functional or psychosocial risk a consumer feels he/she is taking while adopting the innovation. | Innovation's Feature |
| | Reliability | The consistency of the innovation or system to perform and maintain in a desired manner. | Innovation's Feature |
| | Reluctance to change | The degree of unwillingness of individual to use the innovation. | Individual Behaviour |
| | Accessibility | The degree to which innovation can be easily approachable. | Innovation's Feature |
| | Trust | The individual's firm reliance on the integrity of the innovation. | Innovation's Feature |
| | Cost | The extra charges to be incurred by individual for using the innovation. | Innovation's Feature |
| | Perceived Creditability | The degree to which the innovation is getting recognition and praise in the market or among the individuals. | Innovation's Feature |
| | Perceived Enjoyment | The degree to which an individual enjoy using the innovation. | Individual Behaviour |
| | Perceived Expressiveness | The individual willingness to give his personal information to the related organization. | Individual Behaviour |
| | Consumer Innovativeness | The degree to which an individual is relatively quicker in adopting an innovation than other members in the same system | Individual Behaviour |
| | Convenience | The degree to which the innovation is suitable to the individual behavior or utility. | Innovation's Feature |
| | User Friendliness | The degree to which the innovation is comfortable to the users of innovation. | Innovation's Feature |
| | Internet Experience | The experience of the individual having internet connection about its usage. | Individual Behaviour |
| | Market Exposure | The degree to which the organization make the efforts to diffuse the innovation in the market. | Organisational Features |
| | Prior experience | The individual's experience of using the other products which were more or less like the innovation. | Individual Behaviour |
| | Awareness of services | The individual's knowledge about the new products and services. | Individual Behaviour |

## 3.2 Empirical Studies relating to Adoption and Diffusion of Electronic Banking Services Worldwide

In the context of banking sector, these diffusion models have been followed worldwide by various studies to measure the adoption and diffusion level of different innovative services in banking sector. Besides applying these specific models, some studies have also employed a few additional measures relating to organizational performance, psychology of the customers and social influence as the factors affecting the adopters' decision. On the other hand, adoption at any point of time is a result of a cost benefit analysis, where the potential user compares the cost with the potential benefit of the adoption (Khan, 2004). Hence, the adoption and diffusion of innovation within an institution does not guarantee its success until and unless customer will not respond to it. Thus, it becomes necessary for the consumer researchers to explore the perceptions of users regarding the new product launched in the system. Various studies which have basically dealt with the factors having an effect on adoption of electronic banking services by customers have been summarized in Table 2.

**Table 2. Empirical Studies relating to Adoption and Diffusion of Electronic Banking Services**

| *Author (Year)* | *Country* | *Sample* | *Respondents selected* | *Product/ Service* | *Model* | *Additional Factors* | *Methodology* | *Significant Factors/Findings* |
|---|---|---|---|---|---|---|---|---|
| Liao et al. (1999) | Hong Kong | 118 | Professional & Highly educated | VB | TPB & IDT | Result Demonstrability, Risk, Subjective Norms, Image, Visibility, Organisational Support and Learninig | Factor Analysis | Service Quality, Perceived Risk Factors, User Input Factors, Employment, and Education |
| Lee (2000) | Chicago | 4299 | Households | ATM, Debit Cards, Smart Cards | TPB & IDT | Percievced Risk, Reliability, Security | Factor Analysis | Reliability, Security and PEOU, Convenience |
| Hoppe et al. (2001) | South Africa | 102 | Internet Users | IB | IDT & TAM | Self efficacy | Factor Analysis | Attitudinal and Perceived Behavioural Control Factors. |
| Kolodinsky and Hograth (2001) | US | 1000 | Households | Phone banking, Direct Bill Payment, PC Banking | Not Applied | Simplicity | Factor Analysis | Compatibility And Relative Advantage |
| Suganthi B. B. (2001) | Malaysia | 300 | Internet Users | IB | IDT & TAM | Reluctance to change, Accesssibility, Trust, Cost, Risk | Factor Analysis | Internet Accessibility & Cost, Awareness & Attitude Towards Change, Computer And Internet Access Costs, Trust & Security Concerns, Ease Of Use and Convenience. |
| Wungwanitchakorn (2002) | Thailand | 407 | Employees of company | IB | IDT | Image, Risk, Social value, Cost | Logistic Regression | Complexity and Trialability |
| Brown et.al (2003) | South Africa | 162 | Cellphone users | MB | Not Applied | Risk | Factor Analysis | Relative Advantage, Trialability, and Perceived Risk |

| Author (Year) | Country | Sample | Respondents selected | Product/ Service | Model | Additional Factors | Methodology | Significant Factors/Findings |
|---|---|---|---|---|---|---|---|---|
| Mattila M. (2003) | Finland | 1253 | Cellphone users | MB | IDT | Risk | Factor Analysis | Relative Advantage, Compatibility and Perceived Complexity. |
| Wang et al. (2003) | Taiwan | 123 | Bank Customers | IB | IDT | Perceived Risk, Trust, Perceived Creditability, Self Efficacy, Behavioral intention | Factor Analysis | Significant Effect of Computer Self-Efficacy on Behavioral Intention Through Perceived Ease Of Use, Perceived Usefulness and Perceived Credibility. |
| Kolodinsky et al. (2004) | US | 1000 in 1999 & 1002 in 2003 | Households | ATMs, Debit Cards, Prepaid Cards, EFT, PC banking | TAM | Risk and Privacy | Multivariate Analysis | Relative Advantage, Complexity/Simplicity, Compatibility, Observability & Risk |
| Lassar et al. (2004) | USA | 349 | Under Graduate &Graduate Business Students | Online Banking | TAM | Consumer Innovativeness, self Efficacy & Experience | T- Test | Consumer Innovativeness |
| | | | | | | | | |
| Lai & Li (2004) | Hong Kong | 247 | Business Graduate Students | IB | TAM | Not Applied | Chi square Test | PEOU, PU and Attitude |
| | | | | | | | | |
| Luar & Lin (2004) | Taiwan | 180 | Having Age below 45 years | MB | TAM | Perceived creditability (PC), Self efficacy, Financial Cost | Chi square Test | PEOU, PU, PC, Self-Efficacy and Financial Costs |
| McPhail & Ogunmokun (2004) | Queensland | 208 | Senior bank customers having age more than 50 years | Self Service Banking (ATM, EFTOP) | TAM | Risk | Cluster Analysis | Perceived Compatibility, Personal Service Interaction, Self-Efficacy And Perceived Risk |
| Pikkarianen et al. (2004) | Finland | 268 | Bank Professional | Online Banking | TAM | Perceived Enjoyment, Security, Information by banks. | Factor Analysis | PU and Information of Online Banking on the web site. |
| Shi & Fang (2004) | Taiwan | 425 | Personal Bank Customers | IB | TAM | Not Applied | Regression Analysis | Facilitating Conditions did not influence Perceived Behavioral Control |
| Brown and Molla (2005) | South Africa | 142 (IB) & 162 (MB) | Graduate bank customers | IB, MB | TAM | Risk | T- Test | Relative Advantage, Complexity And Risk |
| Eriksson K. et al. (2005) | Estonia | 950 | IB users | IB | TPB, TRA | Trust, risk | Factor Analysis | Perceived Usefulness |

| *Author (Year)* | *Country* | *Sample* | *Respondents selected* | *Product/ Service* | *Model* | *Additional Factors* | *Methodology* | *Significant Factors/Findings* |
|---|---|---|---|---|---|---|---|---|
| Jaruwachirathankul & Fink (2005) | Thailand | 600 | Employees of large companies | IB | TAM | Features of the web site Risk & Privacy, Personal attitude | Factor analysis | Features of the web site and Perceived Usefulness |
| Lee et al. (2005) | USA | 1349 | Internet Banking Adopters | IB | TAM | Risk | Multinomial Logit Model | Risk Included Transaction Security, Familiarity, And Size Of Service Provider. |
| Laforet & Li (2005) | China | 128 | Bank Customers | Online & MB | IDT | Risk | Factor analysis | Security, Risks, Computer And Technological Skill, Lack Of Awareness |
| Wan et al. (2005) | Hong Kong | 314 | Bank Customers | VB | TAM | Convenience, Innovativeness, User Friendliness, Assurance | Frequency Distribution, Annova | ATM is the most frequently adopted channel, followed By Internet Banking Branch Banking and Telephone Banking. |
| Alaghebad P. (2006) | Iran | 180 | Bank customers | Credit Cards | TAM | Social Interaction, Attitude towards change, Cost, Risk | Factor Analysis | Perceived Usefulness, Perceived Ease Of Use, Computer Self-Efficacy and Perceived Credibility. |
| Awamleh & Fernandes (2006) | Non OECD | 700 | Internet users | IB | TAM | Risk, Self Efficacy, , Image, Result Demonstrability, Subjective norm, Intention to adopt | Factor Analysis, Regression Analysis | Relative Usefulness, Perceived Risk, Computer Efficacy and Image |
| Cheng et al. (2006) | Hong Kong | 193 | Internet users | IB | Not Applied | Risk, Self Efficacy | Regression Analysis | Perceived Usefulness, Perceived Ease of Use and Perceived Web Security |
| Gan C. et al. (2006) | New Zealand | 1960 | Households | E- banking | TAM | PU,Customer attitude, Service quality dimensions, Cost, Risk | Logit Analysis | Service Quality, Perceived Risk Factors, Employment And Education |
| Hernandez & Mazzon (2006) | Brazil | 600 | Internet users | IB | IDT & TAM | Relative Advantage, Compatibility, Observability, Trialability, PEoU, Image, Self Efficacy | Regression | Relative advantage of control, Compatibility with lifestyle, Image, Subjective norm, Self-efficacy, Relative advantage of security and Privacy, Results Demonstrability, and Trialability |
| Kassim and Abdullah (2006) | Doha, Qatar | 276 | Bank customers | IB | Not Applied | Trust and Attraction | Regression Analysis | Trust and Attraction |

| Author (Year) | Country | Sample | Respondents selected | Product/ Service | Model | Additional Factors | Methodology | Significant Factors/Findings |
|---|---|---|---|---|---|---|---|---|
| Lichtenstein & Williamson (2006) | Australia | 32 | Internet Banking users ad nonusers | IB | TAM & IDT | Accessibility, Convenience, self Efficacy, Usability, risk, Cost, Knowledge and Support | Factor Analysis | Convenience – In Particular, Time Savings, Online Risk Acceptance and Customer Support |
| Ndubisi and Sinti (2006) | Malaysia | 382 | Bank customers | IB | Not Applied | Complexity, Compatibility, Observability, Risk, Importance to banking needs | Regression Analysis | Compatibility, Complexity, Trialability and Risk |
| Abdullah (2007) | Saudi Arabia | 1097 | Faculty of University | Online Banking | Not Applied | Visibility, Image, Result Demonstrability | Multiple Regression | Relative Advantage , Compatability, Image, Ease Of Use, Visibility |
| Amin (2007) | Malaysia | 250 | Business students | IB | TAM | Perceived Creditibility , self efficacy | Factor analysis, Regression analysis | The Perceived Risk, Trust and Perceived Usefulness |
| Erikkson & Nilsson (2007) | Estonia | 1831 | Internet Banking users | IB | TAM | Not Applied | Discriminant Analysis | Perceived Usefulness |
| Lee et al. (2007) | Korea | 306 | Bank customers | MB | IDT | Perceived Risk, Trust | Factor analysis | Perceived Risk, Trust and Perceived Usefulness |
| Nor et al. (2007) | Malaysia | 1164 | MBA Students | IB | TAM | Not Applied | Structural Model | Trust, Relative Advantage & Trialability, |
| Padachi K. et al. (2007) | Mauritius | 200 | Bank retail customers | IB | TAM | PU, Reluctance to change, trust, accessibility convenience, security, Cost | Factor analysis | PEOU, Reluctance To Change, Trust, Relationship With Banker, Cost, Internet Accessibility, Convenience & Security Concerns |
| Yu and Lo (2007) | Taiwan | 880 | Bank Professional & Academicians | Online Banking | IDT | Trust | Factor Analysis | Perceived Trust and Usefulness |
| Worthington (2007) | China | 196 | Urban Bank Customers | Credit Cards | Not Applied | Attitude, Behavioral Intention | Multiple Regression | Relative Advantage |
| Yiu et.al (2007) | Hong Kong | 150 | General Bank Customers | IB | TAM & IDT | Risk, personal innovativeness | T- test | Risks, Possibility of Performing Banking Transaction Anywhere, Anytime and Reduction in Processing Time |
| Al Somali et al. (2008) | Saudi Arabia | 400 | Bank Customers | Online Banking | Not Applied | Awareness of services, Trust, Social influence, Resistance to Change, self Efficacy, Attitude, Behavioral Intention | Regression Analysis | PEOU, PU, Resistance to Change, Trust, Attitudes towards Use |

| *Author (Year)* | *Country* | *Sample* | *Respondents selected* | *Product/ Service* | *Model* | *Additional Factors* | *Methodology* | *Significant Factors/Findings* |
|---|---|---|---|---|---|---|---|---|
| Clieck (2008) | Turkey | 161 | Internet Banking users | IB | Not Applied | Perceived Risk, Perceived playfulness, Perceived Behavioral control | Factor Analysis | PU, PEOU and Perceived Risk |
| Gounaris & Koritos (2008) | Europe | 1085 | Business & Management Students | VB | TAM | Innovativeness, Visibility, Image, Result Demonstrability | Factor analysis & Logistic Regression | Perceived Characteristics of Innovation related to its Innovativeness and Visibility |
| Hajri & Tatnall (2008) | Oman & Australia | 27 | Operational, Tactical and Strategic Mangers | IB | Not Applied | Relative Advantage, Organisational Performance | Frequency Distribution, Annova | Perceived Relative Advantage, Perceived Organisational Performance, Perceived Customer/Organisational Relationship and Perceived Ease Of Use |
| Krauter & Faullant (2008) | Austria | 381 | Bank Customers | VB | TAM | Risk , Cost | Structural Equation Modelling | Internet Trust on Risk Perception |
| Ozdemir et al. (2008) | Turkey | 154 | Internet users | IB | TAM & IDT | Perceived Risk, Prior Experience | T-Test | Risky and More User-Friendly |
| Qureshi et al. (2008) | Pakistan | 235 | Retail Bank Customers | Online banking | TAM | Perceived enjoyment, Information on Online Banking, Security, Privacy | Regression Analysis | PU, PEOU and Perceived Risk |
| Zhao A. L. et al. (2008) | China | 504 | Bank Customers | IB | TAM | Performance, Convenience, Security, Privacy Psychological and Social factors | Factor Analysis | Perceived Risk |
| Alda´s-Manzano et al. (2009) | Spain | 511 | Internet Banking users | IB | Not Applied | Consumer Innovativeness, Risk | Structural Equation Modelling | Innovativeness And Risk Perception |
| Polasik & Wisniewski (2009) | Poland | 3519 | Random Bank Customers | VB | TAM | Risk | Logistic Regression | Perceived Security |

*Source:* Adapted from different studies.

Here, IDT – Innovation Difussion of Technology (Rogers Model), TAM - Technology Acceptance Model consisting of two factors; PU - Preceived Usefulness, PEoU - Preceived Ease of Use, , TRA- Theory of Reasoned Action, TPB- Theory of Planned Behaviour, PE- Perceived Expressiveness, PC- Percieved Creditibility, IB – Internet Banking, VB- Virtual Banking, EFTPOS- Electronic Funds Transfer at Point of Sale , MB- Mobile banking

## 4. Critical Analysis and Findings

### 4.1 Content Analysis and Appraisal

As per Table 2, the main contents which are taken into consideration for the content analysis of the empirical studies are the year in which the study was being conducted, sample description and the technique used to collect the data from various types of respondents, diffusion models which are specified by the eminent scholars and research methodology used in it to come out with relevant results

along with the findings obtained in nutshell have been studied therein.

**Sample and Respondent selection:** In general, the data used in customer oriented studies is collected through primary sources. In the given study, it has been found that the researchers have used different approaches to reach to respondents or customers i.e. through mail survey, telephonic interview, questionnaires, electronic mail etc. The number of respondents in the sample used by the studies ranges between 27 to 3519. The samples have been selected mainly by convenience sampling technique followed by purposive and quota sampling. The bank customers are the main supporting element to be taken in consideration while making the selection of respondents. In the context of cell phone or mobile, internet, PC and tele banking, mostly the persons who are having access to these facilities are taken into account. Like, the mobile banking adopters can only be the persons who own the mobile and use it as well.

However, some studies have further categorized the bank customers into user and nonuser groups of the specific e banking services to be researched in their studies. According to Rogers (1976), this type of analysis can be regarded as relational analysis or comparative analysis, which can be the most authentic way to explore the encouraging as well as discouraging factors and thus help to provide broader view of the study. However, in Kolodinsky et al. (2004), instead of taking binary variable i.e. adopters and non adopters, have focused on adoption continuum ranging from those who have already adopted it to those who will never be ready to adopt it in near future too. Most of the studies have taken into consideration the educated population like graduate students, academicians, professionals, faculty members etc.

**Services or Product:** In the context of banking, the significant change has been seen due to the impact of electronic medium and information technological advancements. Banks are reengineering themselves to meet the industrial requirements by launching the new products and services which in turn enhance the researchers' curiosity to analyse the latest issue. However, as per the studies reviewed in this paper, Internet banking is found to be their most important or favoured service to study and analyse. Virtual banking is also studied comprehensively which includes mostly all the products that can be provided under the electronic banking services like ATMs, EFT, Credit Card, Human Teller, Internet Banking, Mobile Banking etc. However, plastic cards are not much taken into consideration, a very few studies have been conducted worldwide on plastic cards. Home banking is also a new and innovative idea of the bankers which bring bank to the home of the customers and basically involves internet and telephone banking.

**Diffusion Model:** The most extensively used model out of the four discussed earlier is Rogers IDT model followed by TAM, TPB and TRA respectively. The first two models i.e. Rogers IDT as well as TAM measure the actual adoption level of the customers, while the other two i.e. TPB and TRA focus on measuring the intention to use the e banking services. The researchers found that the variables that influence the intention to use is not significant than that of variables influencing actual adoption of product. However, some authors have not considered any specific model rather they rely on some additional factors they think fit for their study which can have the relevant affect on the decision of adoption by customers along with some factors of specific models.

**Research Methodology:** Factor analysis is the most preferred technique used for primary data and consumers' research. Beside it, Logit regression has also been widely used by many of the innovation researchers. Moreover, Discriminant analysis has also been applied to differentiate the consumers into adopters and non adopters category. However, the extensively used research methodology by many of the researchers is regression analysis where adoption rate has been taken as the dependent variable and all the factors tend to affect the adoption decision of the consumers are taken as independent variables to determine the rate of diffusion and adoption of e-banking among them.

## 4.2 The Significant Constructs and Trends in Previous Research

The research results and the general framework of the diffusion provided development agencies with both kind of theoretical approach and an evaluation procedure. There has been considerable interest in diffusion research on the part of consumer researchers and a certain degree of integration of diffusion frameworks and research findings into the literature on consumer behaviour (Rogers, 1976). A common problem associated with innovation is to know about the main factors (relating to innovation, organizational or personal) influencing the

decision making unit for its adoption and further to know about the rate of its diffusion (Shao, 2007). Many factors have been studied by the researchers as depicted in the Table 2. Apart from the specific factors explored by the various models, additional factors have also been studied along with them. The most significant variables have been discussed below:

In the context of *innovations characteristics* among diffusion models, the factors which fuel the adoption of innovation is mainly *Relative Advantage and Perceived ease of use*. The main reason for their relevance is that the adopters (potential or present) will only shift to the other new product of banking if they will find it more advantageous, secure, easy to handle as compared to the other traditional banking products. In simple words, adopters do the cost-benefit analysis before adopting the product. *Relative Advantage* can be measured in terms of convenience of services and utility or usefulness of services to ultimate users. In banking, it will be significant only if e banking innovation has provided any extra benefit to consumers than traditional and brick and mortar banking. Thus, the ***convenience*** can also be incorporated in this factor rather than constructing a separate individual factor. However some studies have described or taken convenience as an additional factor especially those who don't apply any specific model in their study. Further, the convenience is measured in terms of time saving and possibility of 'anytime anywhere' process of transactions as well as reduction in cost and transaction charges.

The literature also suggests that when investigating *perceived ease of use (PEoU)* can be measured in terms of whether the technology is: easy to navigate, easy to learn and easy to manage. The more easier or simpler is the innovation to conduct or use, more there will be chance to accept that technology. Some additional factors like user *friendliness and accessibility* can also be regarded as part of PEoU.

However, the most significant among the *additional factors* are *perceived risk* and privacy which are related to security aspect of electronic banking. It reveals that the consumers are more conscious while giving their private information to banks and they explore thoroughly about the security aspect of the product or service before actually entering into its adoption. This also shows the customers' distrust on their bankers. According to Cliek, H. (2008), Perceived Risk is the important determinant of E-banking due to absence of personal contact, transaction security and privacy protection involvement in its transaction process. However, it involves the measurement problem for researchers due to its multidimensional construct with overall risk being subdivided into performance, physical, financial, psychological, social loss and time. Most of the studies have mainly focused on the overall risk involved and found its negative impact on the adoption of E-banking service. In relation to *Security, Trust and Perceived expressiveness*, the customers will feel more confident to use the service if they trust banks while giving them private information; feel secure about the hacking of their information and other security related issues.

The prior experiences (positive or negative) of using the other service by customer relating to that innovation too act as influencer to take the final decision. It can be measured with reference to observability, visibility or result demonstrability of the transactions conducted through the innovation which may have tendency to prove that service is reliable and authentic to use or not.

*Self efficacy* presents the individual confidence about using or handling the e banking services independently as more the consumers are aware about the process and how to use the innovation more will be the probability to adopt it and its continuous use. Thus, the adoption trend revealed by the studies present an idea that e banking was not that much popular in the earlier years as the people were not fully tech-savvy and thus method to use e banking services was not familiar to the consumers. Hence, the adoption rate of e banking services was quite low in earlier years as compared to recent years.

Moreover, *Cost, Organizational Support and Learning* have also been found to be significant factors. In the empirical studies reviewed therein, the main organizational factors are *Organisational support and learning, its performance and market exposur*e of the product. In the past 2-3 years, researchers are not only concerned about the innovation features but also rely upon organizational factors, like the banks performance after and before adopting the e banking services, the role of bank in making these services more suitable and comfortable for the customers by providing them support and learning through training and conducting demo fares etc. The market exposure of the product has been measured in terms of banks efforts to make the product more diffused in the market through advertising and other promotional tools.

Some factors like Trialability, Compatibilty and Perceived Creditability are found to have least impact on the decision of customers to adopt e banking services. However, it has also been found out by some studies that cultural differences on the part of individual too play a critical role which is not explained by any of the model. According to Sarosa, S. (2006), the cultural differences may affect the adopters' attitude and intention to use the innovation.

Almost all the empirical studies analyzing the customer responses or perceptions evaluate the demographic factors of the consumers. Among *demographic factors, Education and Occupation* found to be most significant factors as the educated people are more aware about the services available and can use it with more confidence. Moreover, the Occupation relates to the compatibility of the product with the individuals needs, status and values which further influence the customers' decision.

In the context of *psychographic factors*, individual's own attitudinal factors like playfulness, personal innovativeness, image, prior experience, resistance to change are found to be the main influencers than the societal influence of his significant others (parents, friends, co-workers, spouse etc.) on the individual intention to use that technology. It implies that person's decision to adopt the technology is just the outcome of his own perception towards the usage of the e banking and his friends and family do not make any significant contribution to his ultimate decision.

In the light of *services and product*s launched through the e banking, it has been found that in case of *internet banking*, Perceived usefulness and Risk are found to be the main factors having considerable affect on its adoption. In case of *credit cards*, Cost and Ease of use have been found to be the main influencers. Trust and Security are having strong influence in context of *mobile banking* adoption. However, self efficacy is more significant factor in case of Internet banking and Credit cards than that of Mobile banking. Wan et al. (2005) found that among *Virtual banking*, ATM is the most preferred service of Electronic banking followed by internet banking, branch banking and telephone banking due to its *perceived usefulness and user friendliness*. According to Brown and Molla (2005), who have tried *to compare the factors influencing internet banking and mobile banking adoption*, found that the perceptions of internet banking are more positive among those who actually use internet for their routine or operational tasks. However it does not hold same for the Mobile banking as Mobile users do not find keen interest in the adoption of cell phone banking practices.

## 5. Recommendations of the Study

On the basis of above discussion, following recommendations can be made to the researchers and bankers:

***To Researchers***

- The researchers should not rigidly follow the specific model. They should also include the additional factors by specifically focusing on their country and culture therein.
- Change agents also play an important role in the diffusion process of the innovation as they can make consumers more aware about the new product, can diagnose their problems and thus lead to the stable adoption by checking discontinuance of product by customers in future. The researchers need to explore the factors which may be responsible for the discontinuance of use of accepted services in future, which has not been taken into consideration by most of the researchers.
- Time is a significant element to be explored in the diffusion research, which has been ignored so far. The researchers may use two sample or dataset, taking at two different points of time which will help them (i) to analyse the rate of adoption of innovation in different time frames and (ii) to compare the change occured in the behaviour of present and potential adopters by the passage of time and finding out the reason of that change in behavior.
- In future, the comparison of various services can be done in order to compare the different factors affecting the adoption of different services of e banking and thereof finding the reasons for such difference. The relationship between these influencing factors can also be examined.
- Among sampling techniques and respondent selections, Convenience sampling is found to be mostly used method. However, the randomness of the data is diversely affected while using this technique. Hence it will be better if researchers apply Probability random sampling instead of convenience sampling.
- Besides innovation and individual features, environmental factors like international challenges,

globalization etc. too affect the adoption decision of the consumers but these have not been taken into account in the research yet. These factors will help to explore the adoption level of consumers at macro level.

***To Bankers***

- Customer is the king now days; banks should innovate in a manner the customers feel convenient and easy to adapt. The bank should launch the products from customers' point of view which are user friendly in terms of simplicity, cost, and utility etc.
- The banks are now performing their activities at international level, thus it becomes necessary for them to meet the requirements of customers by exposing its services at both national and international markets.
- Banks should provide adequate support and knowledge to the customers to make them aware about the new services rendered by conducting training programs and demo fares so that they do not feel hesitant even while using them at first time.
- As security is found to be important issue, thus bank should take all possible steps to overcome this problem, which can further help the bank to increase the trust of customers in innovation.

Hence, the vast literature available on e banking has been studied which throw light on the key determinants and factors influencing its adoption by customers. It can be concluded that technology drives the innovations in the sector, which act as catalyst for the banks to offer standardized services and products to their ultimate customers. The customers in return perceive the new launch of banks worth adoption only if it has potential to provide them some extra benefit. Hence, innovation's characteristics and its relative advantage and easiness play a vital role in ultimate decision of customers' regarding the adoption of e banking. In spite of the various issues relating to security of e banking and psychographic factors of customers which may act as barrier in adoption decision, the adoption and diffusion of e banking products is an ongoing process.

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