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# AN INVESTIGATION INTO THE FACTORS AFFECTING ATTITUDE TOWARDS ADOPTION OF INTERNET BANKING IN INDIA

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## ABSTRACT

***Information technology is one of the important sectors which has entirely changed the world's economy. Internet banking (IB) is the latest technology which has set new trends among the consumers. The present research studied the factors influencing the consumer's adoption of internet banking which include perceived usefulness (PU), perceived ease of use (PEOU), compatibility, perceived behavioral control (PBC) and subjective norms. A revised research model was used based on the technology acceptance model (TAM) and decomposed theory of planned behavior (DTPB), with the addition of compatibility factor. The collected data was analyzed with the help of various statistical techniques. The results have supported the hypothesis.***

**KEYWORDS:** ***internet banking, perceived usefulness, perceived ease of use, technology acceptance model***

## INTRODUCTION

Revolutionary development in Information and Communication Technology (ICT) in the past 20 years has impacted individuals as well as businesses in a profound way. It is an invaluable and powerful tool driving development, supporting growth, promoting innovation and enhancing competitiveness (Bauer 2005; Chau 1996). Industrial and service sectors have witnessed a rapid shift particularly in the last decade under the pressure of some forces affecting the marketing environment. One of the major forces behind these developments is technology, which is breaching geographical, industrial, and regulatory barriers, creating new products, services, market opportunities and developing more information and systems-oriented business andmanagement processes (Liao and Cheung 2002). In the world of banking, the developments in information technology have had an enormous effect in development of more advanced payment methods and more user-friendly banking services. Internet banking and other electronic payment systems are new, and the development and diffusion of these technologies by ûnancial institutions is expected to result in a more efficient banking system. This technology offers institutions alternative or non-traditional delivery channels through which banking products and services can be delivered to consumers more conveniently and economically without diminishing the existing service levels. Internet banking (IB) is such a delivery channel that deserves special attention from ûnancial institutions, policy-makers, researchers, and academicians owing to its enormous potential from the viewpoint of banks, businesses, and retail consumers. This research has, therefore, focused on the internet banking phenomenon with particular reference to technology acceptance models.

## FACTORS AFFECTING ADOPTION OF INTERNET BANKING

Past researches have empirically found positive relationship between *perceived usefulness (PU)* and *perceived ease of use (PEOU)* as critical factors on the use of internet banking (Daniel1999). Davis (1989) defines *PU as the degree to which a person believes that using a particular system will enhance his or her job performance.* In addition, *PEOU refers to the degree to which the person believes that using the system will be free of effort.* Perceived usefulness, reûecting a person's salient belief in the use of the technology, will be helpful in improving performance. Perceived ease of use is a person's salient belief that using the technology will be free of effort

(Taylor and Todd 1995). According to Venkatesh (2003), PU and PEOU are determinants of the behavioral intention (BI). Previous studies (Lee 2009; Tan and Teo 2005) have suggested that PU and PEOU will have a significant impact on a user's adoption of internet banking. The relationship between PU and PEOU is that PU mediates the effect of PEOU on attitude and intended use. This means that while PU has a direct impact on attitude and intention to use, PEOU influences attitude and intention to indirectly through PU.

Innovation Diffusion Theory (IDT) by Rogers (1962) includes five significant innovation characteristics: relative advantage, compatibility, complexity, trialability, and observables. These characteristics are used to explain the user adoption and decision making process. Research hassuggested that only the relative advantage, compatibility, and complexity are consistently related to innovation adoption (Agarwal 2009).Relative advantage is similar to perceived usefulness, whereas complexity is similar to perceived ease of use. So, an additional antecedent found to be significant in determining consumers' intention to use internet banking services is *compatibility* (Wu and Wang 2005). *Compatibility is the degree to which the innovation is perceived to be consistent with the potential users' existing values, previous experiences, and needs* (Lee 2005). High compatibility will lead to preferable adoption.

Another important factor which is considered important is *perceived behavioral control (PBC). PBC refers to the factors that may impede the performance of the behavior.* This definition encompasses two components. The first component is "*self-efficacy"* and is defined as an individual's self-confidence in his or her ability to perform a behavior (Bandura 1977, 1982). The second component is *"facilitating conditions"* and it reflects the availability of resources needed to engage in the behavior (Triandis 1999). An individual confident in having the skills in using the computer and the internet banking and having easy access of technological resources and infrastructures would be more inclined to adopt internet banking. This is because the individual is comfortable in using the innovation.

In terms of a consumer-oriented service, the consumer-relevant groups around the individual may influence the individual's adoption. Chau (2003) suggests that the adopter's friends, family, and colleagues/peers are groups that will potentially influence the adoption of internet banking. *Subjective norms* have been found to be more important prior to, or in the early stages of innovation implementation when users have limited direct experience from which to develop attitudes (Hartwick and Barki 1994; Taylor and Todd 1995). *Subjective norms refer to "the person's perception that most people who are important to him think he should or should not perform the behavior in question"* (Fishbein and Ajzen 1975). It is related to intention because people often act based on their perception of what others think they should do.

So, the following hypotheses have been proposed in order to achieve the objective of the present study:

**H1**: Perceived usefulness (PU) positively influences the attitude towards adoption of internetbanking.

**H2:** Perceived ease of use (PEOU) positively influences the attitude towards adoption of internet banking.

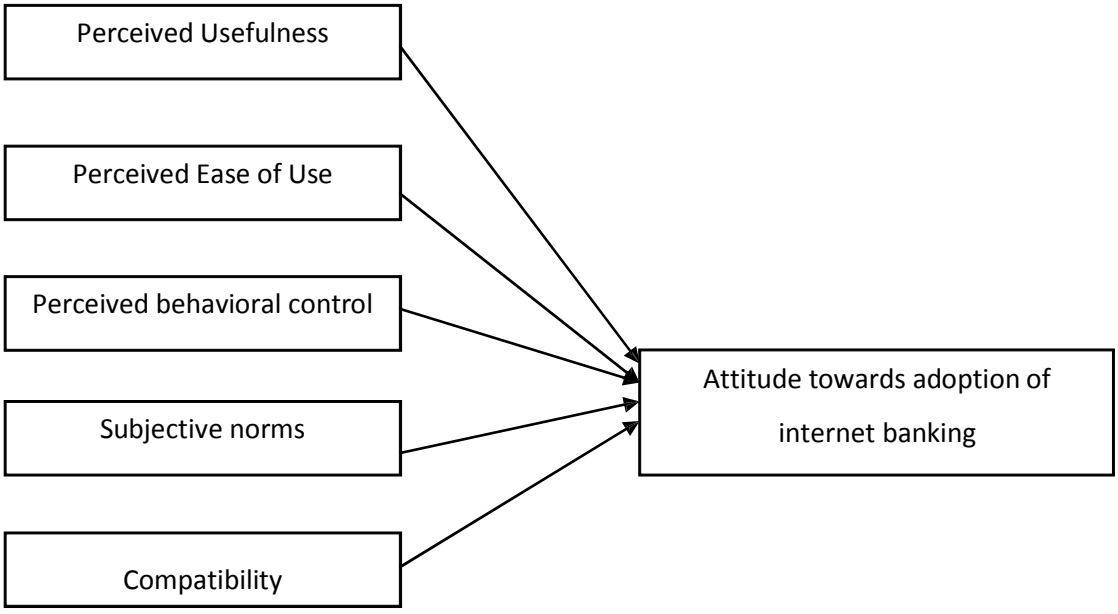
**H3**: Compatibility positively influences the attitude towards adoption of internet banking.

**H4**: Perceived behavior control (PBC) positively inûuences the attitude towards adoption of internet banking.

**H5**: The beliefs associated with subjective norms (SN) positively influence the attitude towards adoption of internet banking.

The theoretical model is graphically presented in Figure 1.

**Figure 1: Factors affecting Internet banking adoption**




This study attempts to provide a useful picture of the current market for internet banking in India. The study identifies the factors involving perceived usefulness (PU), perceived ease of use (PEOU), compatibility, perceived behavioral control (PBC) and subjective norms affecting the decision to adopt internet banking.

Virtually every step in the proposed online transaction process requires consumers to interact with Web sites and use internet technologies. Since intention to transact entail technology use, it is justifiable to consider the variables of the various technology acceptance models in identifying the factors influencing the adoption of internet banking.

The above factors have been derived from the various technology acceptance models. The next section presents the theories and models developed in different disciplines and used in predicting, explaining, and understanding individuals' acceptance and adoption of new products or technologies.

## TECHNOLOGY ACCEPTANCE MODELS

Fishbein and Ajzen's (1975) TRA (theory of reasoned action) model is an especially well researched intention model that has proven successful in predicting and explaining behavior across a wide variety of domains and should, therefore, be appropriate for studying the behavioral intentions of consumers to adopt an innovative product or service. In their conceptual framework, Fishbein and Ajzen (1975) specified three major determinants of behavior: behavioral intention (BI); attitude and subjective norms. They explained the behavioral intention model using these three major variables in a hierarchical sequence to facilitate understanding. They postulate that: (i) an individual's BI is the immediate determinant of behavior; (ii) his/her attitude and subjective norm are mediated through BI; and (iii) his/her behavioral and normative beliefs are mediated through attitude and subjective norms respectively.

Although TRA has gained wide acceptance in the behavioral sciences and the literature due to its well integrated paradigm, the likelihood that a person will actually perform the specific behavior has been questioned by many researchers(e.g., Warshaw and Davis 1985; Davis 1989). For example, in a situation where there is a gap between BI and actual behavior, lower correlation was found between BI and actual behavior in the studies (Bonfield 1974; and Harrell and Bennett 1974).

Because of the limitations of the theory of reasoned action,) proposed the theory of planned behaviour (TPB). The central factor of the theory of planned behavior is the individual's intention to perform a given behavior. The main difference between these two theories is that the TPB has added perceived behavioral control (PBC) as the determinant of behavioral intention, as well as control beliefs that affect the perceived behavioral control. Though it may be difficult to assess actual control before behavior, TPB asserts that it is possible to measure PBC people's perception of the ease or difficulty in performing the behavior of interest" (Ajzen 1991).

In a further extension of TRA, Davis (1986) introduced the technology acceptance model (TAM), which described an individuals' acceptance of information technology. The goal of TAM is to provide an explanation of the determinants of computer acceptance among users.TAM suggests that *perceived usefulness (PU)* and *perceived ease of use (PEOU)* are the two most important factors in explaining individual users' adoption intentions and actual usage (Davis 1989). TAM does not include TRA's subjective norms (SN) as a determinant of BI. TAM posits that PU is influenced by PEOU because, other things being equal, the easier a technology to use, the more useful it can be. Consistent with TRA, TAM suggests that the effect of external variables on intentions is mediated by PEOU and PU.

Taylor and Todd (1995) criticized TRA and TPB stating that the models require individuals to be motivated to perform a certain behavior. Furthermore, TPB introduced one variable (PBC) as an answer to all non-controllable elements of the behavior. Beliefs behind the (PBC) were aggregated to create a measure for it. This aggregation has been criticized for not identifying specific factors that might predict behavior and for the biases it may create. Taylor and Todd (1995) introduce decomposed TPB to provide a better understanding of behavior.

Specifically, the decomposed TPB model first introduced by Taylor and Todd was used since it was found to have better predictive power compared to the technology acceptance model (TAM) and traditional TPB models. The argument of our empirical study is that internet banking is a technological innovation and thus the decomposed TPB model gives a more satisfactory explanation of adoption intention.

Further, Taylor and Todd commented that, *in comparing the two versions of TPB, "we believe that there is value added as a result of the decomposition, in terms of increased explanatory power and a better, more precise, understanding of the antecedents of behavior. Thus, in our view, the decomposed TPB is preferable to the pure form of the model.*" In comparing the model to TAM, Taylor and Todd commented that, *if the sole goal is the prediction of usage, then TAM might be preferable.* However, the decomposed TPB provides full understanding of usage behavior and intention and may provide more effective guidance to IT managers and researchers interested in the study of system implementation.

The decomposed TPB model uses constructs from the innovation literature (e.g., relative advantage, compatibility). It also explores subjective norms (e.g., social influence) and perceived behavioral control more completely by decomposing them into more specific dimensions. It provides a comprehensive way to understand how an individual's attitude, subjective norms and perceived behavioral control can influence his or her intention to use banking services on the nternet banking. The framework postulates that a person's intention to adopt e- banking is determined by three factors. They are (a) *attitude*, which describes a person's perception towards e- banking; (b) *subjective norms*, which describe the social influence that may affect a person's intention to use internet banking; and(c) *perceived behavioral control*, which describes the beliefs about having the necessary resources and opportunities to adopt internet banking. Intention to adopt e- banking services, in return, is expected to affect the actual adoption of internet banking.

TAM also suffered from a number of limitations such as measurement of usage by relying on respondents' self-reporting and assuming that self reported usage reflects actual usage, type of respondents, only limited guidance about how to influence usage through design and implementation, the explanatory power of the model and the inconsistent relationship among constructs. In an attempt to overcome these limitations, TAM2 was developed to cover for theTAM2, an extension of TAM, includes additional key determinants of perceived usefulness and usage intention constructs which are meant to explain the changes in technology acceptance over time as individuals gain experience in using the targeted technology. The new model incorporates additional theoretical constructs covering social influence processes (subjective norm, voluntariness, and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability, and perceived ease of use).

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Wu and Wang (2005) combined TAM2 and innovation diffusion theory (IDT) by Rogers (1995), in a study focused on investigating the drivers of mobile commerce. In IDT, Rogers (1995) defines diffusion as the process by which innovation or perceived new technology is communicated through certain channels over time among members of a social system. Rogers (1995) proposed and defined the five attributes determining the rate of adoption of new technology as follows:

- *Relative advantage*: is the extent to which the innovation is perceived as better than the technology it replaces, including technical performance, cost, risk, or other attributes;
- *Compatibility:* is the extent to which an innovation is perceived as being consistent with the existing values, past experiences and needs of potential users,
- *Complexity:* is the level of difficulty in understanding and using the technology;
- *Observability:* is the extent to which the results of a new technology can be observed or visible to others;
- *Trialability:* is the ability to try or experiment with the performance of new technology on a limited basis.

Since TAM (Technology acceptance Model) and TPB (Theory of Planned Behavior) have been used in many studies to predict and understand user perceptions of system use and the probability of adopting an online system (Gefen 2003; Hsu 2006; Wu and Chen 2005), they are the most appropriate tools for understanding internet banking adoption.

## RESEARCH METHODOLOGY

This study intends to evaluate the adoption of internet banking service in Delhi. The key intention of this study is to identify the factors that induce customers to adopt the internet banking service. For the present study, using convenience sampling technique, a sample survey of consumers from the metropolitan city of Delhi was conducted. In order to make the sample representative of the population, it was decided to select respondents from various socio-demographic groups of people living in Delhi. In total, 600 questionnaires were distributed to the respondents in their houses, offices, institutes and colleges. After repeated calls, 380 filled in questionnaires were received back, resulting in an overall response rate of 63.33%, but only 340 questionnaires were retained for the purpose of analysis and 40 were discarded due to incomplete or absurd responses.

53.4% of the respondents were male and 46.6% were female. 31.5% of them are married. The majority of the respondents (74.8%) were below 30 years old. Most of the respondents are either students (50.4%) or from service class (30.6%). Majority of the respondents (62.6%) are graduate and post graduate.

A survey has been designed to collect the necessary data about the consumer's attitudes and intentions towards the use of internet banking.Based on the previous studies (Cheng 2006; Featherman and Pavlou 2003; Wu and Wang 2005; Yiu 2007; Wu and Chen 2005; Venkatraman and Price 1990; Clark and Goldsmith 2006; Venkatraman 1991; Goldsmith 1998; Manzano, Navarré, Mafé, Sanz-Blas 2009; Goldsmith, d'Hauteville, and Flynn's 1998; Flynn and Goldsmith 1993), a structured non-disguised questionnaire was developed and modifications were made under the guidance of the supervisor to secure demographic and attitudinal data.The questionnaire was comprised of 4 sections, which are discussed below:

*Section 1* dealt with the respondents' demographic variables like gender, age, income, education,occupation etc.

*Section 2* comprised of the questions related to the dimensions of internet banking adoptions. This section asked about nature of respondent's bank account and whether they use internet banking or not.

*Section 3* consists of the statements about perception about internet banking. This part consisted of statements on perceived usefulness and perceived ease of use. Statements on perceived usefulness and perceived ease of use were adopted from the scale developed by Cheng (2006) containing four items and three items for each construct.

*Section 4* consists of the questions based on statements on compatibility, perceived behavioral control and subjective norms. Perceived behavior control and subjective norms were adapted from the measurements defined by Wu and Chen (2005), containing three items for each construct.

All the statements in Sections 3 and 4 were framed using seven point likert scale, ranging from strongly agree (1) to strongly disagree (7), (SD=Strongly Disagree, D= Disagree, LD=Little Disagree, I = Indifferent, LA= Little Agree, A= Agree, SA= Strongly Agree). Negative statements were reversely coded.

Before conducting the main survey, we performed a pre-test to validate the instrument. A *pilot te*st was conducted among the customers of internet banking. The purpose of the pilot test is to ensure that the respondents understand the questions in the questionnaire. 30 respondents were selected to answer the questionnaire during the pilot test.

## DATA ANALYSIS

*Statistical Package for Social Sciences (SPSS) version 19* was used as the analysis tool. The research instruments in this study are frequency distribution, descriptive statistics analysis and multiple regression analysis.

*Frequency distributions* were obtained for the demographic profile, that is, age, sex, marital status, education, work status and family monthly income. A *descriptive analysis* (e.g.,frequency, mean, and standard deviation) is used to present and interpret the data collected on attitude affecting adoption of internet banking. *Regression Analysis* is a powerful and flexible procedure for analyzing associative relationships between a dependent variable and one or more independent variables. It is used to determine whether the independent variables explain a significant variation in the dependent variable. *Linear Regression* estimates the coefficients of the linear equation, involving one or more independent variables that best predict the value of the dependent variable. This study is using the multiple regression to study the relationship between attitude towards adoption of internet banking (dependent variable) and perceived usefulness, perceived ease of use, perceived behavioral control, subjective norms and compatibility (independent variables). Attitude towards adoption of internet banking was measured using the following four statements adapted from Cheng (2006) **:** *I think that using internet banking is a good idea, I think that using internet banking for ûnancial transactions would be a*

*wise idea, I think that using internet banking is pleasant, In my opinion, it is desirable to use internet banking.* These statements were measured on 7-point likert scale ranging from 1 to 7. The following scale is used to interpret the value of mean score:

| | |
|---|---|
| Less than 1.25 | Strongly Disagree |
| 1.25 – 2.25 | Disagree |
| 2.25 – 3.25 | Least Disagree |
| 3.25 – 4.25 | Indifferent |
| 4.25 – 5.25 | Least Agree |
| 5.25 – 6.25 | Agree |
| Above 6.25 | Strongly Agree |

Table 1 gives the summary form of descriptive statistics to measure the attitude of the customers towards the adoption of internet banking.

**Table 1: Statistical measurement of Attitude**

| Variables | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| ATT | 337 | 1.00 | 7.00 | 5.5067 | 1.09348 |

The mean score is 5.5067 with standard deviation 1.10 (approximately).According to the above scale, the mean score is above 5.25 indicating that on an average the respondents have agreed with the statements based on attitude. The standard deviation of 1.10 indicates that most of the respondents are very close to the mean of all the variables. This shows that majority of the respondents have a positive attitude towards the adoption of internet banking. The minimum of 1 indicates that there are some respondents who have strongly disagreed and maximum of 7 indicates that some respondents who have strongly agreed with the statement.

The regression analysis was conducted to show how different factors affect the attitude towards internet banking.

**Table 2**

| R | R Square | Adjusted R Square | Std. Error of the |
|---|---|---|---|
| 0.757 | 0.572 | 0.565 | 0.774 |

| Variables | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|
| (Constant) | | 1.325 | 0.186 |
| Perceived Usefulness **(PU)** | 0.115 | 2.348 | **0.019*** |
| Perceived Ease of Use **(PEOU)** | 0.199 | 4.049 | **0.000**** |
| Compatibility | 0.476 | 8.665 | **0.000**** |
| Perceived Behavioral Control **(PBC)** | 0.155 | 2.993 | **0.003**** |
| Subjective Norms **(SN)** | 0.069 | 1.563 | 0.119 |

**Notes:**
**Dependent variable:** Attitude towards adoption of IB
** signify that difference is significant at 1% since p<0.01
* signify that difference is significant at 5% since p<0.05

The results indicate a statistically significant positive relationship between *perceived usefulness (PU) and attitude* (p=0.019 and β=0.115) and *perceived ease of use (PEOU) and attitude* (p=0.000 and β=0.199). Hence, the hypothesis $H_1$ and $H_2$ are supported.

This finding refers to the fact that consumers use internet banking for the benefits and also due to its easiness in use in comparison to other banking delivery channels. This finding is in line with other studies (Davis 1986, Hua 2009, Jane, Hogarth and Hilgert 2004, Lee 2009) who found that PU and PEOU have a significant positive impact on attitude towards adoption of internet banking.

It is also found that compatibility exerts a significant positive impact (p=0.000 and β=0.332) on attitude towards adoption of internet banking. Hypothesis $H_3$ is, thus, supported. This finding is in agreement with the researches of Bradley and Stewart (2003) , Wu and Wang (2005) and Agarwal (2009), which showed that consumers who feel that internet banking is more compatible with their values are more intent on using internet banking services.

The results indicate a statistically significant positive relationship between *perceived behavioral control (PBC)* and attitude towards adoption of internet banking (p=0.003 and β=0.155). Hence, hypothesis H4 is supported. The above result is in line with the findings of Lee (2009), Tan and Teo (2005) Wu and Chen (2005), who concluded PBC as a significant factor in studying the attitude and intention towards adoption of internet banking.

The results indicate an insignificant relationship between *subjective norms (SN)* and attitude towards adoption of internet banking. (p=0.119 and β=0.069). Hence, hypothesis $H_5$ is rejected. The results do not comply with the previous findings (Hartwick and Barki 1994, Taylor and Todd 1995, Chua 1980 and Lee 2009) which proved subjective norms as a significant factor in predicting the intention towards adoption.

The value of adjusted $R^2$ =0.565 is also statistically significant, indicating that the independent variables are able to explain 56.5% of variance in dependent variable.

## CONCLUSION AND IMPLICATIONS

The present research studied the factors influencing the consumer's adoption of internet banking in India and hence investigates the influence of perceived usefulness (PU), perceived ease of use (PEOU), compatibility, perceived behavioral control (PBC) and subjective norms on attitudetowards adoption of internet banking. A revised research model was used based on the technology acceptance model (TAM) and decomposed theory of planned behavior (DTPB), with the addition of compatibility factor.

Using convenience sampling, a survey of 600 consumers located in Delhi was conducted through structured non-disguised questionnaire. However, 340 usable questionnaires were ultimately obtained. The responses for the majority of variables are taken on seven-point Likert- type scale.The collected data was analyzed with the help of various statistical techniques. The results have supported the hypothesis.

Perceived usefulness and perceived ease of use are significant factors in influencing the attitude and intention to adopt internet banking. As we know from previous researches also, perceived usefulness is always an important determinant of attitude in TAM, and it may mediate the influence of perceived ease of use on attitude. Indeed, perceived ease of use has long been recognized as a basic requirement for system design. Easy-to-use internet banking is important for all customers. Banks should aim to make their internet banking as simple and easy to use as possible so that customers do not perceive them as being complicated or difficult to use. It provides insights for developers to design an internet banking system interface, websites, processes, and programmes and for banks to formulate strategies in offering services. Websites should be user-friendly with clear instructions for users. The use of illustrations is advised and will be embraced by all levels of users. There is a need to further enhance mechanical resources within the structure of the main internal framework. That is to say, if internet banking becomes popular, there would be problems generated by the influx of banking transactions being made at the same time. Banks need to look into better equipping their systems with more powerful and advanced computer technologies.

Based on the results of this study, consumers who feel that internet banking is more compatible with their values are more intent on using internet banking services. The more a customer uses internet banking, and the more he or she perceives internet banking to be compatible with his or her lifestyle, the more likely that customer will continue to use internet banking. Therefore, aperception of compatibility of internet banking is an influential factor in the use of internet banking.

Furthermore, even if users have a strong intention to perform a behavior, they will not be able to do so without necessary resources and skills (perceived behavioral control).The results of this study are also consistent with this idea suggesting that perceived behavioral control has a significant influence on the intention and adoption of internet banking.

The results of this study indicate that the intention to adopt IB is also not affected by subjective norms (social influences). In other words, opinions of friends, parents or colleagues are not considered as an important factor when deciding whether to adopt internet banking service. One possible reason is that relevant information is readily available from banks, thereby reducing the reliance of potential adopters on their friends, family, or colleagues for information about these services.

## LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

First, the study is conducted in city of Delhi. As such the results cannot be generalized to the universe of India since the sample selected was based on the convenience sampling approach and hence, it is not representative. Second, the application of advanced statistical techniques such as structural equation modelling, discriminant analysis, cluster analysis, etc. is also suggested as it would help in determining not only the independent effect of each of the antecedent variable on adoption of internet banking but, also their interacting effect. Third, possible area for future research is that the study on the adoption of internet banking services in India can be extended to corporate customers. The antecedent constructs included in the study are not exhaustive. Past studies have suggested certain other variables such as trust, internet prestige, web design/features, internet experience are considered important in studying the factors influencing internet banking. Accordingly, these dimensions could also be researched in future.

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