Internet banking: Understanding consumer adoption rates among community banks

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Abstract

As the internet becomes more important for commerce, internet websites will take on a more central role in most companies' business plans. The success of internet banking is determined not only by banks or government support, but also by customers' acceptance of it. Online banking acceptance has gained special attention in academic studies during the past several years as banks move towards implementing internet banking as part of their overall strategy. The business benefit of the internet banking is to generate additional revenue, improve customer service, extend marketing, and increase cost saving.

In accepting the internet and maximizing its potential, there are several stages that firms evolve through that involve different roles. These different stages of change are reflected in the many levels that are present when firms go through the adaptation of new technology including internet banking. From the literature review, some key questions were identified for example, to what extent should banks modify their internet services for customers?

The aim of this paper is to identify those areas in which banks could improve or modify their services to increase the adoption rate of internet banking. Data was gathered from non internet banking users via a survey questionnaire. The results of the respondents were analyzed using Structured equation Modeling (SEM) from which the hypothesis were tested and conclusions drawn.

The results from the survey indicated that customers who have some level of Internet usage and some degree of Internet experience have led to an increase in the adoption of internet banking.

Keywords: Internet Banking, E-commerce, SEM, TAM

Introduction

Since the mid-1990s, there has been a fundamental shift in banking delivery toward using self-service channels such as online banking. During the past years online banking acceptance has been rapid and current worldwide. Approximately 74 percent of the private banking customers in Finland are regular users of internet banking services (The

Finnish Banker's Association, 2004). In general, Europe has been and still is the leader in online banking technology and usage.

As the internet becomes more important for commerce, internet websites are playing a more central role in most companies' business plans. An especially elegant case has been made for the "Internet-only" business model in the banking industry. Such as, eliminating the need for physical branch offices; this results in the reduction of overhead expenses. Banks can then use the resulting savings to reduce their loan interest rates or increase their deposit interest rates, attracting new customers without sacrificing earnings. The web-based distribution focus allows banks to enter new geographic markets without the costs of acquiring existing banks or of starting up new branches, further increasing growth potential.

Online banking in this study is defined as an internet portal, through which customers can use different kinds of banking services ranging from bill payment to making investments. Therefore banks' websites that offer only information on their pages without the option to do any transactions are not qualified as online banking services.

The success of internet banking is determined not only by banks or government support but also by customers' acceptance of it. The customer has a great influence on the adoption of internet banking (Pikkarainen, Pikkarainen, Karijaluoto, and Pahnila, 2004). As they ultimately decide on whether they will use internet banking based on their individual needs. If the service can clearly show the benefits and how they address customers' needs, then customers are more likely to use internet banking. Previous research into internet banking has mainly focused on innovation adoption in the context of North America and Europe (Pikkarainen et al., 2004) and to some degree, other areas such as Turkey (Polatoglu and Ekin, 2001).

However, a study on potential factors influencing internet banking adoption in different regions of the USA may provide useful insights as to what factors are critical to customers by specific regions, as different regions throughout the USA may have different needs that determine success. The goal of this article is to increase our current understanding of the critical factors that influence online banking acceptance and usage for small banks in the **Midwest regions**. More accurately, online banking acceptance will be studied using the factors that are important from the success point of view, referring to the idea that consumers are using banks' information system (online banking service) directly. Hence, more knowledge on the factors that affect information systems adoption is needed in order to better understand and facilitate the acceptance.

This article is divided into four parts: the first part contains a literature review on online banking and information systems acceptance. The second presents the research methodology used in this work. The third is comprised of the results and analysis in which data is analyzed using Structured Equating Modeling (SEM). The final part consists of the conclusions and practical implications of the research.

Literature review

Online banking acceptance studies

Online banking acceptance has gained special attention in academic studies during the past five years as banking journals have devoted special issues on the topic (Mukherjee and Nath, 2003). Two reasons can be established for online banking development and diffusion. First, banks can save costs by offering online banking services. It has been proven that online banking channel is the cheapest delivery channel for banking products once established (Giglio, 2002.) Second, banks can reduce their branch networks and downsize the number of service staff, which opens the way for online banking as many customers feel that branch banking requires too much of their time and effort. Therefore, time and cost savings and freedom from place have been found to be the main reasons underlying online banking acceptance (Howcroft, Hamilton and Hewer, 2002).

Online banking offers many benefits to banks as well as to customers. However, when compared globally the percentage of online users is not as high in the USA as other regions of the world. There can be several reasons for this, the most obvious being that customers need to have access to the internet in order to utilize the service. Also new online users first need to learn how to use the service. Nonusers often complain that online banking has no social dimension, i.e. they are not served in the same way as in a face-to-face situation at a branch. Plus there are issues of security and privacy.

The business benefit of the internet, according to Gow (1997), is to generate additional revenue, improve customer service, extend marketing, and increase cost saving. Banks enjoy these benefits as well. In an article entitled "Next-Generation Retail Banking" (Compaq, 2001), the business drivers for internet banking included:

- Additional transaction revenues. Banks can derive revenues over and above their offline revenues by charging for online services and value-added services, such as providing a portal for financial services linked to short-and long-term insurers, links to stock brokers, and links to foreign banks.
- Savings from reduced transactional costs. On the internet, customers serve themselves, negating the need for frontline staff. Savings are gained from reductions in staff, reduction in branch sizes, and reduction in consumable costs: such as paper, ink cartridges, and other stationery.
- Opportunities for acquiring new customers. Customers looking for the flexibility and convenience offered by internet banking will be attracted to banks providing the best services. Existing customers can be sold products that they do not have in their portfolio such as a second credit card, life insurance, and home loans among others.
- Improved ability to retain customers. Customer relationship management (CRM) can be facilitated by the data acquired and captured on the corporate database. Products and services can be customized to suit the needs of the customer or groups of customers, thus facilitating customer loyalty.

Factors in Consumer Adoption of Internet Banking

A generic theoretical framework, Figure 1 shows that a bank must first attract banking consumer *attention* to the internet banking service before the consumer will consider internet banking. However, unless the consumer has a high level of internet *accessibility* at home or at work, they are unlikely to consider using internet banking. The consumer also assesses whether it is convenient to conduct their banking that way (*convenience*), how usable the application appears (*usability*), and their perceived competence of internet use and banking application use (*self-efficacy*). The four factors of accessibility, self-efficacy, convenience and usability are interrelated. The consumer also considers whether the perceived relative advantages of internet banking compared with other banking forms outweigh perceived risks and costs. In addition, the availability of sufficient support and in depth knowledge from the bank and its employees contribute significantly to the adoption decision.

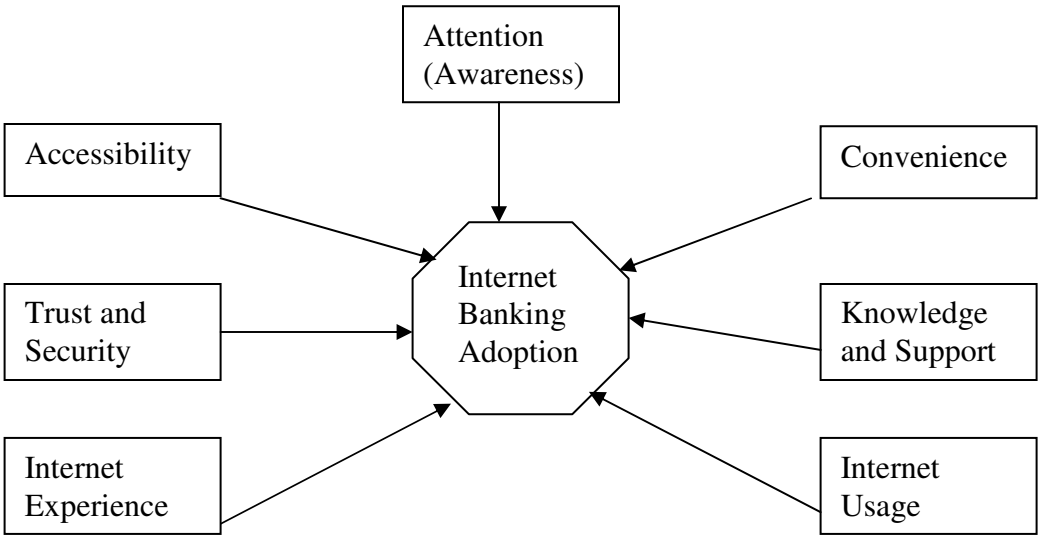
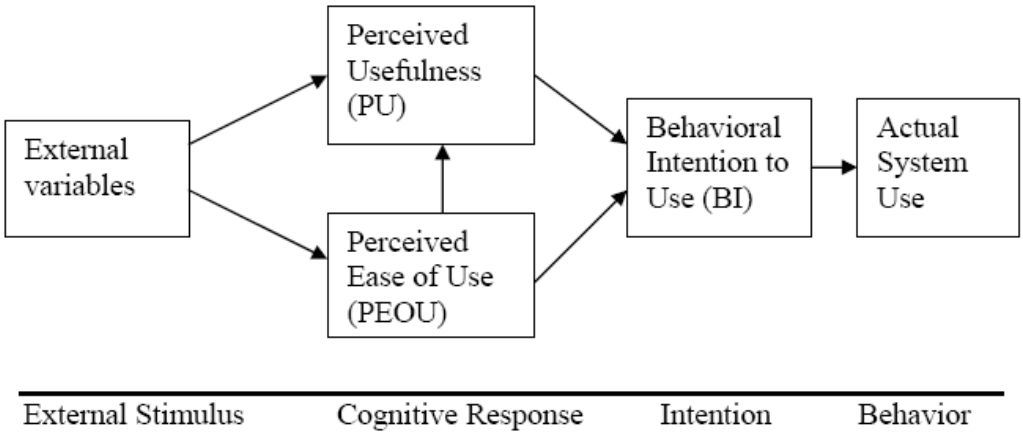


Figure 1: Key factors in consumer adoption of IB, a generic theoretical framework

TAM and related studies

One of the most utilized model in studying information system acceptance is the technology acceptance model (TAM) (See Figure 2) in which system use (actual behavior) is determined by perceived usefulness (PU) and perceived ease of use (PEOU) relating to the attitude toward use that relates to intention and finally to behavior.

- Perceived ease of use (PEOU), defined as "the degree to which a person believes that using a particular system would be free of effort"
- Perceived usefulness (PU), defined as "the degree to which a person believes that a particular system would enhance their performance"



(Davis and Venkatesh, 1996[1])

Figure 2: Technology Acceptance Model (TAM)

According to the TAM these two beliefs are of primary significance for computer acceptance. PU refers to the prospective user's subjective likelihood that the use of a certain application will increase his or her performance. PEOU is defined as the degree to which the prospective user expects the potential system to be free of effort (Davis et al., 1989). According to DeLone and McLean (1992) system use as the dependent variable is acceptable if system usage is not compulsory. TAM has been tested widely with different samples in different situations and proved to be a valid and reliable model explaining information system acceptance and use (Mathieson, 1991; Davis and Venkatesh, 1996.)

The model

Based on the preceding study of current bank customers a model indicating the acceptance of online banking was developed (Figure 3). The model consists of factors hypothesized to have an effect on acceptance of internet banking.

TAM is an adaptation of the Theory of Reasoned Action (TRA) to the field of IS. TAM envisions that perceived usefulness and perceived ease of use determine an individual's intention to use a system with intention to use serving as a mediator of actual system use. Perceived usefulness is also seen as being directly impacted by perceived ease of use. Researchers have simplified TAM by removing the attitude construct found in TRA from the current specification (Venkatesh, Speier and Morris, 2002). Attempts to extend TAM have generally taken one of three approaches: by introducing factors from related models, by introducing additional or alternative belief factors, and by examining antecedents and moderators of perceived usefulness and perceived ease of use (Wixom and Todd, 2005).

Factors and their relationship to TAM

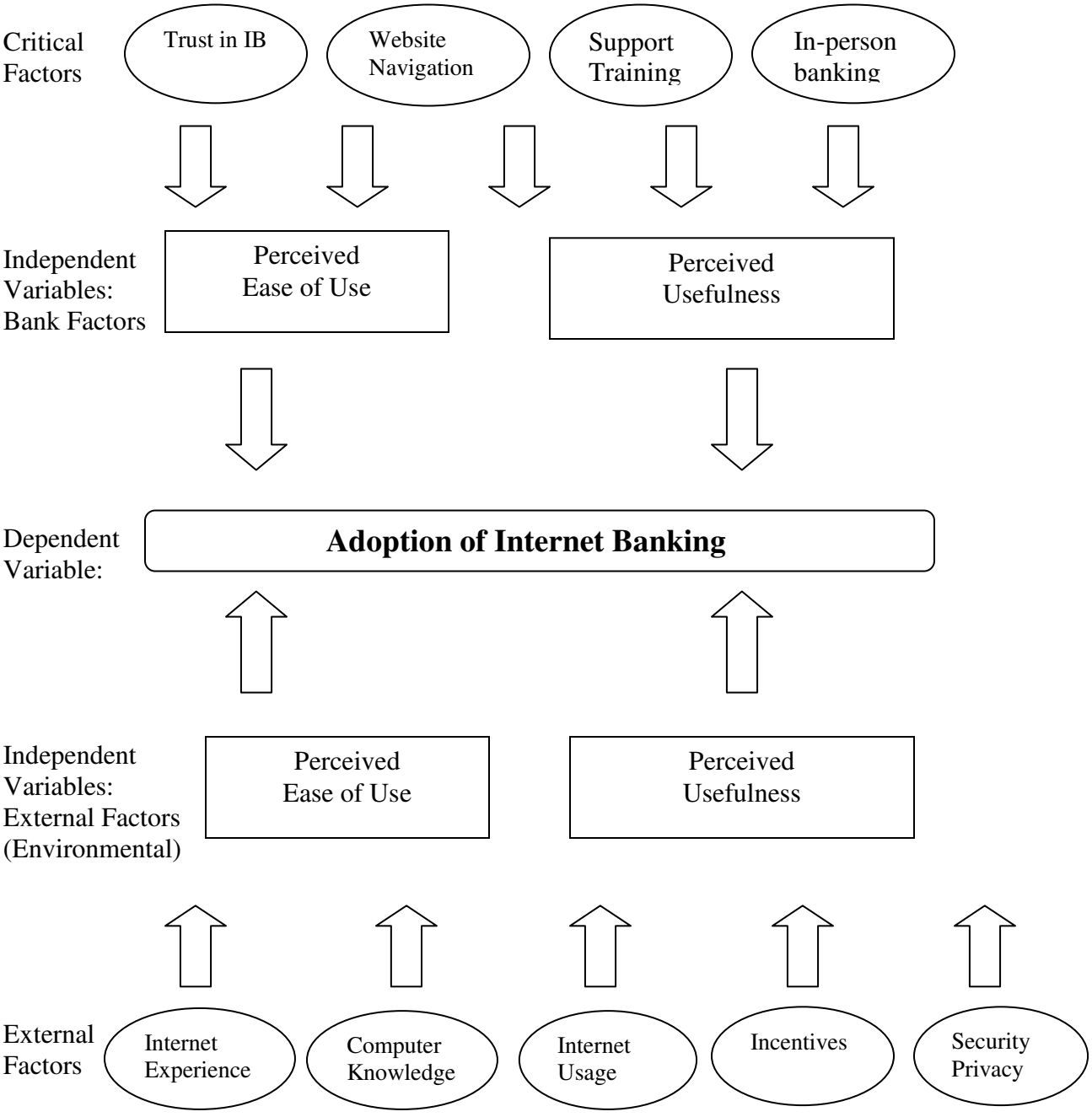


Figure 3: Critical success factors of IB

The following items have been identified as common determinants of predicting the adoption of internet banking and other types of e-commerce. For the purpose of this study only the five *external factors* have been selected for closer investigation in this research.

Perceived Usefulness	"The degree to which a person believes that using a particular system would enhance their performance" (Davis, 1989)
Perceived Ease of Use	"The degree to which a person believes that using a particular system would be from effort" (Davis, 1989)
Trust in IB	A person's estimate of their faith in using a particular system
In-person banking	A person's preference for using the branch
Organizational Support	The importance of support a customer receives from their own organization
Website navigation	A person's ability to find their way around a particular website
Incentives	The amount of influence that an organization effects on its' customers
Security/Privacy	The degree of faith that an organization will handle all transactions securely and privately
Computer Knowledge	How much a person knows about computers and technology
Internet Experience	A person's familiarity with the Internet
Internet Usage	The amount of time a person has spent using the Internet

Knowledge of IB

The amount of knowledge consumers have about IB has been identified as a major factor impacting its adoption. According to Sathye (1999) while the use of IB services is a fairly new experience to many people, low knowledge of IB services and benefits is a major factor in causing people not to adopt IB. Hence, we posit that:

H1a. The amount of knowledge a consumer has about IB has a positive effect on Perceived Usefulness

H1b. The amount of knowledge a consumer has about IB has a positive effect on Perceived Ease of Use

Incentives

The importance of offering incentives is not new in the marketing environment. Without some sort of reward system or compensation system, encouraging the use of IB will be difficult, especially for hard-line customers. Hence we posit:

H2a. The quality of the incentives has a positive effect on Perceived Usefulness

H2b. The quality of the incentives has a positive effect on Perceived Ease of Use

Security and privacy

The importance of security and privacy to the acceptance of online banking has been noted in many banking studies (Sathye, 1999; Hamlet and Strube, 2000; Tan and Teo, 2000; Polatoglu and Ekin, 2001; Black et al., 2002; Giglio, 2002; Howcroft et al., 2002). To be more precise, privacy and security were found to be significant obstacles to the adoption of online banking in Australia (Sathye, 1999). Roboff and Charles (1998) found that people have a weak understanding of online banking security risks although they are aware of the risks. Furthermore, they found that consumers often trust that their bank is more concerned about privacy issues and will protect them. Finally they argue that although consumers' confidence in their bank is strong, their confidence in technology is weak (Howcroft et al., 2002).

Users want to control what kind of data is collected, the purpose, length of time it is recorded, and reasons why it is processed (Kobsa, 2001; Kobsa, 2002). Gathering and recording user data without consumers' awareness is a major concern (DePallo, 2000).

Trust, security, and privacy are multidimensional constructs and need further explanation. In this article the concentration is only on the aspects consumers are most concerned with. Which are interest in the level of confidence in the technology and willingness to adopt the online banking service as provided. Thereby the following hypotheses are proposed:

H3a. Security and privacy have a positive effect on Perceived Usefulness

H3b. Security and privacy have a positive effect on Perceived Ease of Use

Internet Experience

Based on related researches, prior technical skills in using the internet may affect intention to use internet banking. For example, prior computer experience has been found to influence intent to use a variety of technology applications including microcomputers and e-learning, as well as distance education (Kerka, 1999).

H4a. Internet Experience has a positive effect on Perceived Usefulness

H4b. Internet Experience has a positive effect on Perceived Ease of Use

Internet Usage

The Internet is a potential source of knowledge, information as well as a platform for social interaction. As such, Internet usage is usually motive driven -- mainly for the three aspects of communication, information gathering and entertainment.

The items measuring the Internet usage consisted of different types of Internet functionalities. Participants were required to indicate their frequency of usage for each of these functionalities. A scale corresponding to how long a person has been using the Internet was used in this study.

H5a. Internet Usage has a positive effect on Perceived Usefulness

H5b. Internet Usage has a positive effect on Perceived Ease of Use

Perceived usefulness PU and perceived ease of use PEOU

TAM posits that PU is a significant factor affecting acceptance of an information system (Davis et al., 1989). Davis defined PU as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989). In the online environment perceived usefulness is about the perception of the usefulness of making purchases over the internet. Therefore, in this study, it is defined as the extent to which a person believes that using IB will create value for them.

According to TAM, PEOU is a major factor that affects acceptance of information system (Davis et al., 1989). PEOU is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989). In the online environment perceived ease of use is about the perception of the ease of using IB. Therefore, in this study, it is defined as the extent to which a person believes that using IB will be free from effort or effortless for them. Hence an application perceived to be easier to use than another is more likely to be accepted by users. By applying these to online banking context we hypothesize:

H6. Perceived usefulness (PU) has a positive effect on consumer adoption of IB

H7. Perceived ease of use (PEOU) has a positive effect on consumer adoption of IB

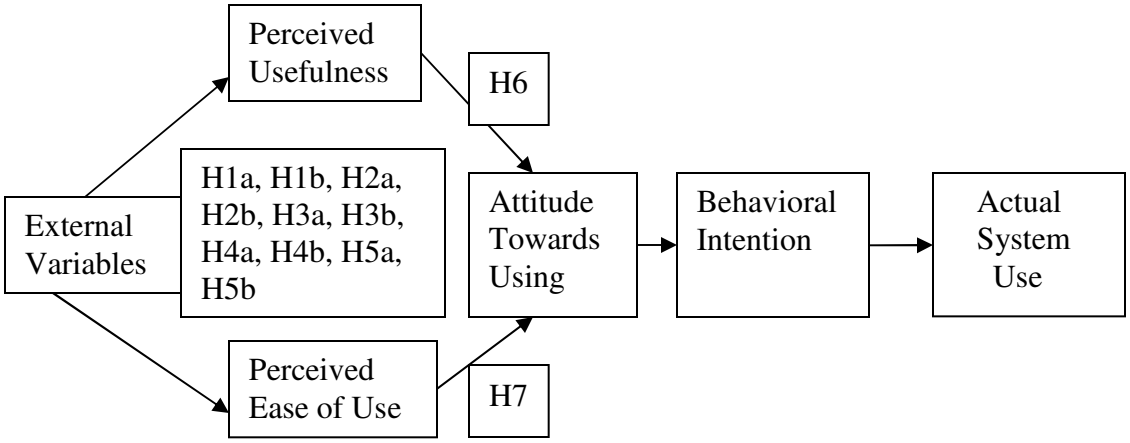


Figure 4: The measurement model for the study based on TAM

The structural paths for the model (Figure 4) represent the following hypothesis to be tested.

H1a. That consumer knowledge of IB has an effect on Perceived Usefulness
H1b. That consumer knowledge of IB has an effect on Perceived Ease of Use

H2a. That the quality of the incentives has an effect on Perceived Usefulness
H2b. That the quality of the incentives has an effect on Perceived Ease of Use

H3a. That security and privacy have an effect on Perceived Usefulness
H3b. That security and privacy have an effect on Perceived Ease of Use

H4a. That internet experience has an effect on Perceived Usefulness
H4b. That internet experience has an effect on Perceived Ease of Use

H5a. That internet usage has an effect on Perceived Usefulness
H5b. That internet usage has an effect on Perceived Ease of Use

H6. That the perceived usefulness (PU) affects customers' adoption of IB

H7. That the perceived ease of use (PEOU) affects customers' adoption of IB

Data Collection Instrument

The data for the study was gathered through an undisguised questionnaire. It was pre-tested several times among various faculty members as well as managers in the banking sector with special responsibility for IB in order to verify face validity of the items. The

purpose of the pretest was to address any misunderstanding of the wording of the questions.

The questionnaire was formalized using literature on IB and other banking studies, measuring customer behavior, satisfaction and service quality. The first part of the questionnaire includes questions on internet habits and usage. The second part of the questionnaire consisted of questions regarding the usage of IB services; measuring the satisfaction of customers already using these services and actions that a current user may take when using the services. The third part was for those who are currently IB users. It measures their usage of and level of experience with the internet, which relates to their intention to adopt this service. The fourth section included the demographic characteristics of the sample such as gender, age, education level, employment, income and accessibility.

The main purpose of the questionnaire was to identify the key factors that are important to facilitate current users and the factors that would increase internet adoption among non-users of IB in the Midwest regions.

Data analysis

In analyzing the questionnaire, means, frequencies and reliability were initially calculated using SPSS software, and content validity of the questionnaire was established by reviewing existing literature. Also the test for 'goodness of fit' SEM was performed. The multivariate technique of SEM was chosen for this study because, it can:

- analyze the relations between both the unobservable (latent) and observable variables; and
- test the validity of the causal structure

The technique has two stages. The first is the measurement model, which specifies how well the constructs are measured in terms of the observed variables. The second is the structural model, which focuses on the relationships among the constructs.

The survey questionnaire captured background data for study participants. Overall 362 non-IB users' questionnaires were useable, 37 were considered invalid. The respondents in this study were relatively older adults, with 45.7 per cent under 36 years of age and 31.1 per cent between 36 and 51 years of age.

In terms of computer experience, approximately 18.7 per cent of respondents were beginners to intermediate, 32.8 per cent were considered average, and 48.5 per cent had above average experience. This is consistent with previous research, which found that internet users have above average computer experience because it requires computer awareness and internet skill.

Regarding internet experience, 82.4 per cent had more than three years, 10.7 per cent had two to three years, 2.7 per cent had one to two years and only 4.2 per cent had less than one year of experience using the internet.

The measurement model: Testing for internal consistency

Reliability Analysis

PLS (Partial Least Squares) was used to assess the reliability of the measures in addition to the Cronbach's alpha. The Cronbach's alpha evaluates the proportion of variance attributable to the true score of the variable the researcher intends to measure. It reflects the consistency of the measure and the homogeneity of the items in the scale. PLS evaluates the individual item reliability and presupposes no distribution form (like multi-normality) of the data (Gopal, Bosrom and Chin, 1992). PLS is recommended to evaluate the loadings of each item with its construct. These loadings should be higher than 0.5 (ideally higher than 0.70) which indicates that significant variance is shared between each item and the construct. In this study, to further increase the reliability levels, items were dropped when their removal meant that the level of reliability would increase.

Average Variance Extracted (AVE) was calculated as a measure of reliability of the construct, the acceptable level of AVE is 0.50 (Chin, 1998). This indicates that more than 50% of the variance of the indicators has to be accounted for by the latent variables. All the constructs exceed the minimum AVE level and therefore demonstrate sufficient reliability.

Validity

Validity refers to the degree to which a study accurately reflects or assesses the specific concept that the researcher is attempting to measure. While reliability is concerned with the accuracy of the actual measuring instrument or procedure, validity is concerned with the study's success at measuring what the research sets out to measure. There are two types of validity used to analyze scale evaluation: content and construct validity.

The structural model: Testing for significance

In order to validate the theoretical model and make inferences with regards to the hypotheses, data analysis was performed using the Path Analysis method. Model fit was analyzed as a measure of the validity of the model and statistical significance of the path coefficients were used to make conclusions about the hypotheses. Table 1 shows the standardized regression coefficients (β) named "path coefficients" in SEM terminology as well as the T-statistics and R^2 values.

Under PLS, R^2 values of endogenous variables are used to determine the fit of the model. Interpretation of the R^2 values is similar to ordinary least squares method regression. The results of the data analysis including the R^2 values are pictorially presented in Figure 5.

R^2 values measure the construct variance explained by the model. The R^2 for "behavioral intention," the endogenous variable to be explained is 0.435. For the rest of the variables, "perceived usefulness" it is 0.613 and for "perceived ease of use" it is 0.516.

A standardized path coefficient analyzes the degree of accomplishments of the hypotheses. Chin (1998) suggests that they should be greater than 0.3 to be considered significant.

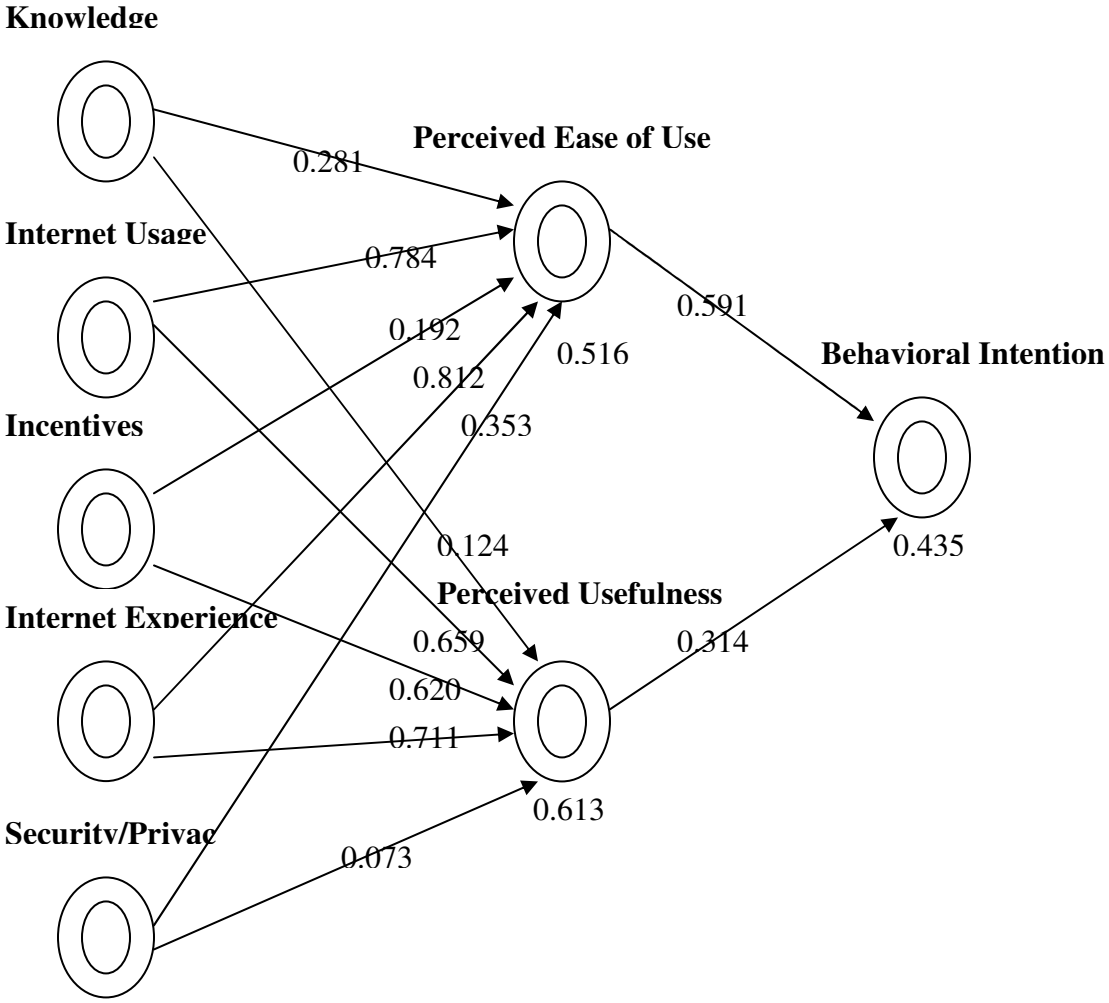


Figure 5: The structural model for the study based on TAM

Table 1
Statistical Significance of Coefficients

Endogenous Variable	R^2	Independent Variable	Standardized Coefficient	T-Statistic	P-Value less than
		Knowledge	0.124	1.315	0.121
Perceived		Internet Usage	0.659	4.425	0.040*
Usefulness	0.613	Incentives	0.620	6.598	0.030*
		Internet Experience	0.711	3.912	0.035*
Perceived		Security/Privacy	0.073	1.327	0.127
Ease of Use	0.516	Knowledge	0.281	4.584	0.045*
		Internet Usage	0.784	2.483	0.007
		Incentives	0.192	0.997	0.184
		Internet Experience	0.659	2.870	0.002
		Security/Privacy	0.353	1.632	0.101
Willingness		Perceived Usefulness	0.119	1.984	0.071
to Adopt IB	0.435	Perceived Ease of Use	0.327	8.954	0.001***

*p < .05 **p < .01 ***p < .001

Discussion and Conclusions

The analysis of the study focused on the reliability and validity of the data and measurement model, and the path coefficients and goodness of fit of the structural model. The constructs displayed strong internal reliability on three measures: Cronbach's Alpha, Composite Reliability and Average Variance Extracted (AVE). The constructs also demonstrated strong convergent and divergent validity. High indicator construct loadings showed strong convergent validity, whereas strong divergence was shown by the cross loadings results. Also, shown is the square root of the AVE whose own construct value was higher than the variables of other constructs.

The R^2 for Willingness to Adopt is 0.435 (43.5%), reflecting that the model does provide a strong explanation of the variance. This indicates that the model can be used as a good method of explaining what causes these differences and is useful in predicting Willingness to Adopt, which is synonymous with intent to use IB. However, it must be noted that the variables with respect to Internet Usage and Experience has contributed to the adoption of IB.

In addition, we are interested in learning how well the antecedents alone can predict adoption of IB. Because these factors can be measured during the stages of IB, some predictions can be made based on the antecedents to guide management on the factors to consider when marketing IB services to non-users. Individually these antecedents can predict the adoption of IB with some degree of accuracy, however when combined they provide a useful explanation to the adoption of IB.

The R^2 for Perceived Usefulness is 0.613 (61.3%) and Perceived Ease of Use is 0.516 (51.6%). These represent a strong explanation of the variance of these endogenous variables. And as the beta coefficients (ß) are strong for each of the exogenous variables, analyzing them separately will help to isolate individual measurements that can be useful.

This study hypothesized 7 antecedents to Willingness to Adopt, 5 exogenous and 2 endogenous to measure non-users of IB and factors that are important to them. The study found that 4 of these independent variables - quality of incentives, knowledge of computers, internet usage and internet experience – significantly predict expectations within the theoretical model. As well, Perceived Ease of Use (how the system will be free of effort) of the IB system is an important factor in adopting IB services.

While separately these factors can't statistically predict IB adoption, understanding how these factors are important to consumers would be useful for management. These direct-effects models provide a good indicator as to what is considered important to non-IB users.

In the *service* environment, consumers are involved in the assembly and consumption of services due to the inseparability dimension of services. In the IB environment, the inference of inseparability is complicated due to the lack of social presence, i.e., the sellers of the service are not available physically at the point of usage. Thus consumers have to complete the process without interaction from service providers.

Consumers may therefore, find it difficult to use online IB services, leading to a decrease in their intention to adopt IB. In response, companies need to standardize their IB services to make the service as simple as possible for consumers to use. At the same time, they need to develop more effective websites that offer clear and precise instructions, so as to provide adequate support for users of their services.

By boosting the ease of use of IB services, combined with bank defined incentives, banks in the Midwest region would stand a better chance of increasing the adoption rate of IB users. And from a management's perspective it may be worthwhile to move these factors to the forefront of their IB marketing programs.

Reference

Black, N.J., Lockett, A., Winklhofer, H. and McKechnie, S. (2002), "Modelling consumer choice of distribution channels: an illustration from financial services", The International Journal of Bank Marketing, Vol. 20 No. 4, pp. 161-73.
Compaq (2001), “Next-generation retail banking”, available at: http://nonstop.compaq.com/view.asp?IO=5985
Chin, W.W. (1998), "Issues and opinions on structural equation modeling", MIS Quarterly, Vol. 22 No.1, pp.7-16
Davis, F.D. (1989), "Perceived usefulness, perceived easy of use, and user acceptance of information technology", MIS Quarterly, September, pp. 319-40.
Davis, F.D. and Venkatesh, V. (1996), "A critical assessment of potential measurement biases in the technology acceptance model: three experiments", International Journal of Human-Computer Studies, Vol. 45, pp. 19-45.
DeLone, W.H. and McLean, E.R. (1992), "Information systems success: the quest for the dependent variable", Information Systems Research, Vol. 3 No. 1, pp. 60-95.
DePallo, M. (2000), National Survey on Consumer Preparedness and E-Commerce: A Survey of Computer Users Age 45 and Older, AARP, Washington, DC.
Giglio, V. (2002), "Privacy in the world of cyberbanking: emerging legal issues and how you are protected", The Secured Lender, March/April, pp. 48-60.
Gopal, A., Bosrom, R. and Chin, W. (1992), “Applying Adaptive Structuration Theory to Investigate the Process of Group Support Systems Use, ” Journal of Management Information Systems, 9, No. 3, pp. 45-69.
Gow, K. (1997), “Risk vs opportunity”, The Premier 100 Supplement to Computerworld, February, pp.24
Hamlet, C. and Strube, M. (2000), "Community banks go online", ABA Banking Journal's 2000 White Paper/Banking on the Internet, March, pp. 61-5.
Howcroft, B., Hamilton, R. and Hewer, P. (2002), "Consumer attitude and the usage and adoption of home-based banking in the United Kingdom", The International Journal of Bank Marketing, Vol. 20 No. 3, pp. 111-21.
Kobsa, A. (2001), "Tailoring privacy to users' needs (invited keynote)", in Bauer, M., Gmytrasiewicz, P.J. and Vassileva, J. (Eds), Proceedings of the User Modeling 2001): 8th International Conference, Springer Verlag, Berlin and Heidelberg, pp. 303-13.
Kobsa, A. (2002), "Personalized hypermedia and international privacy", Communications of the ACM, Vol. 45 No. 5, pp. 64-7.
Mathieson, K. (1991), "Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior", Information Systems Research, Vol. 2 No. 3, pp. 173-91.
Mukherjee, A. and Nath, P. (2003), "A model of trust in online relationship banking", The International Journal of Bank Marketing, Vol. 21 No. 1, pp. 5-15.
Parsons, A., Zeisser, M. and Whitman, R. (1996), “Organizing for digital marketing”, The McKinsley Quarterly, No. 4
Pikkarainen, T., Pikkarainen, K., Karijaluoto, H. and Pahnila, S. (2004), Customer acceptance of on-line banking: an extension of the technology acceptance model, Internet Research, 14(3), pp. 224-235

Polatoglu, V.N. and Ekin, S. (2001), "An empirical investigation of the Turkish consumers' acceptance of Internet banking services", International Journal of Bank Marketing, Vol. 19 No. 4, pp. 156-65.
Roboff, G. and Charles, C. (1998), "Privacy of financial information in cyberspace: banks addressing what consumers want", Journal of Retail Banking Services, Vol. XX No. 3, pp. 51-6.
Sathye, M. (1999), "Adoption of Internet banking by Australian consumers: an empirical investigation", International Journal of Bank Marketing, Vol. 17 No. 7, pp. 324-34.
Tan, M. and Teo, T.S.H. (2000), "Factors influencing the adoption of Internet banking", Journal of the Association for information Systems, Vol. 1 No. 5, pp. 1-42.
The Finnish Banker's Association (2004), "Banking Technology in Finland", available at: www.pankkiyhdistys.fi
Venkatesh, V, Speier, C. and Morris, M.G. (2002), "User acceptance enablers in individual decision making about technology: toward an integrated model", Decision Sciences, Vol. 33 No. 3, pp. 297-316.
Wixom, B. H. and Todd, P. A. (2005), “A theoretical integration of user satisfaction and technology acceptance”, Information Systems Research, 16(1), 85-102

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