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Adoption of internet banking: An empirical study in Hong Kong

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Abstract

This study investigates how customers perceive and adopt internet banking (IB) in Hong Kong. We developed a theoretical model based on the Technology Acceptance Model (TAM) with an added construct Perceived Web Security, and empirically tested its ability in predicting customers' behavioral intention of adopting IB. We designed a questionnaire and used it to survey a randomly selected sample of customers of IB from the Yellow Pages, and obtained 203 usable responses. We analyzed the data using Structured Equation Modeling (SEM) to evaluate the strength of the hypothesized relationships, if any, among the constructs, which include Perceived Ease of Use and Perceived Web Security as independent variables, Perceived Usefulness and Attitude as intervening variables, and Intention to Use as the dependent variable. The results provide support of the extended TAM model and confirm its robustness in predicting customers' intention of adoption of IB. This study contributes to the literature by formulating and validating TAM to predict IB adoption, and its findings provide useful information for bank management in formulating IB marketing strategies.

Keywords: Technology Acceptance Model (TAM); Internet banking; Structural equation modeling

1. Introduction

The bursting of the Internet bubble in early 2001 has generated numerous speculations that the opportunities for Internet services firms have vanished. The dot.com companies and Internet players have been struggling for survival, and most of the related businesses are still suffering losses. Practicing managers and academics have not yet reached a consensus in their debate about this new technology: whether the Internet brings about a revolutionary change in the fundamental way we do business or whether it is only an evolutionary process, offering simply a new distribution channel and communication medium [29]. According to Brown [9], the "New Economy" or e-commerce businesses are still at the infancy stage. Despite the crash of dot.com stock prices in March 2001, Internet usage and e-commerce have continued to grow at a fast pace.

According to eMarketer [16], the US B2C e-commerce revenues reached US$70 billion in 2002, compared to US$51 billion in 2001, i.e., a jump of 37%. It also predicted that by 2003, the e-commerce revenues would increase by 28% to US$90 billion; another 21% increase to US$109 billion by 2004; and to US$133 billion, a further 22% increase, by 2005. Compared with

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the global economic growth of less than 5%, and the forecast GDP growth of 1–2% for Hong Kong in 2003, the predicted e-commerce growth of 28% is very encouraging. The anticipated explosive growth of online purchases via the Internet will present immense opportunities to businesses in general, and internet banking (IB) in particular.

In this study, we use the terms IB and Online Banking (OB) interchangeably. IB/OB is different from Electronic Banking (e-banking) in that the latter is a higher level activity that encompasses not only IB/OB, but also Telephone Banking, ATM, WAP-banking and other electronic payment systems that are not operated through the Internet. We focus on IB because it is widely seen as the most important and most popular delivery channel for banking services in the cyber age.

Banks can benefit from much lower operating costs by offering IB services, which require less staff and fewer physical branches. Customers will also benefit from the convenience, speed and round-the-clock availability of IB services. However, IB has not taken off in Hong Kong as spectacularly as expected. According to ACNielsen and NetRatings [1], 522,700 people in Hong Kong visited an IB site from their home PC in January 2003 (out of 2,194,600 active Internet users), representing a penetration rate of only 23.8%. To realize the full potential of IB, banks need to develop new products and services to fully utilize the Internet's capabilities. On the other hand, customers need to be made aware of IB services, and feel secure and comfortable with using such services as the new IB operating procedures are radically different from those they are used to.

There is a clear need to study the factors that influence customers' intention to adopt IB so that banks can better formulate their marketing strategies to increase IB usage in the future. This study aims to investigate the behavioral intention of customers to use IB services with a focus on users' perceptions of ease of use and usefulness of IB, and of security of using this new technology to meet their banking needs. In Section 2, we present a review of the literature on innovation diffusion and technology adoption, based on which we propose a model of customers' intention to adopt IB, and formulate the associated research hypotheses. We discuss the research methodology in Section 3, and present the findings from the analysis of the empirical data in Section 4. Section 5 concludes the paper with discussions of the limitations of the study, managerial implications and further research directions.

2. Literature review and model formulation

Although an abundance of studies aimed at extending our understanding of user adoption of technology have been conducted in the past, few of these studies were conducted on IB services by extending the well-established Technology Acceptance Model (TAM). With the number of global banking groups offering and improving IB services rapidly on the rise [4], it is an opportune time to study the user adoption of IB. Such a study will be of interest to both academics and banking executives. Specifically, this study investigates individuals' perception of the adoption of internet banking for corporate purposes. In other words, our survey focused on individuals' intention to use internet banking to handle their work-related banking issues.

2.1. Technology Acceptance Models

Davis [14] developed the Technology Acceptance Model, according to which "users' adoption of computer system" depends on their "behavioral intention to use", which in turn depends on "attitude", consisting of two beliefs, namely Perceived Ease of Use and Perceived Usefulness. In fact, Davis [14] developed TAM by building upon an earlier theory, the Theory of Reasoned Action (TRA) by Fishbein and Ajzen [17]. In TRA, Fishbein and Ajzen [17] proposed that intention is "the immediate determinant of the corresponding behavior", which is divided into (1) "attitude toward behavior", and (2) "subjective norm concerning behavior". Davis [14] posited in TAM that the two theoretical constructs, Perceived Usefulness and Perceived Ease of Use, are fundamental determinants of system use in an organization. These constructs also provide better measures for predicting and explaining system use than other constructs [14].

TAM has become a widely used model for predicting the acceptance and use of information systems, and has recently been applied to predict Internet adoption as well. In a recent study, Lederer et al. [26] adapted TAM to study World Wide Web (WWW) usage and found evidence to support TAM. Another study of applying TAM in the WWW context was conducted by Moon and Kim [30]. They introduced the construct Playfulness to predict Attitude. Data were collected from 152 graduate students of management in Korea. Their findings showed that although TAM-related hypotheses were all supported, the results deviated from the basic belief of TAM that