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Using information-systems constructs to study online- and telephone-banking technologies

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Abstract

The research literature has seen a number of studies aimed at understanding customer attitudes towards banking technologies, and thereby providing implications for developmental planning and marketing. However, even though banking technologies have a significant amount of information systems (IS) component to them, there is a paucity of research that considers them from the IS perspective. In this paper, we fill this gap by considering three constructs, namely usefulness, ease of use and usage, that are all rooted in the IS literature. We study user's perceptions of these constructs, as well as the relationships among them, for both online and telephone banking.

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1. Introduction

Since 1980s, banks have continuously innovated through technology-enhanced products and services. One service that is common today is telephone banking. Telephone banking allows customers to conduct transactions through telephones, and as compared to branch/ATM banking, it is already

more cost-effective for banks, in addition to it being convenient and easily accessible to customers.

Another banking innovation is emerging as a result of the aggressive expansion in microcomputing and communications technologies: the US Department of Commerce estimates that over 50% of US households had home computers by the year 2000, and Internet subscriptions increased by over 15% between 1998 and 2000 [5]. These growth patterns have spawned the rapid development of the online business sector, and have impacted society during the past decade. The banking sector is no

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exception. Today, almost every major commercial bank offers *online banking* services in which personal banking transactions are available over the Internet or other related technologies. With online banking, people can access the service anywhere, anytime. The online-banking market has expanded dramatically and is expected to grow continuously [61]. This has drawn enormous interest from researchers. Significant previous consumer- and marketing-oriented research has been conducted to understand user's attitudes towards online banking (e.g., [22,36,49]), as well as the bank's perspective to go online (e.g., [3,43]). On the other hand, since banking technologies are involved in the provision of information to consumers, they must also be viewed as an information system, and must therefore be studied using constructs grounded in the IS literature. Given this background, the goals of our research are twofold.

The first goal, which has not been taken up in the literature, is to study how banking technologies affect IS constructs of user-acceptance. The constructs we consider are: perceived usefulness (U), perceived ease of use (EOU), and usage. Perceived usefulness refers to the degree to which users perceive that the system will enhance their job performance, and it can be a key factor to a user's acceptance or rejection of a system [20]. In the banking context, usefulness could mean getting banking chores done quickly, enhancing the effectiveness in managing accounts and transactions, and so on. By contrast, EOU is related to the effort involved in using the system. As stated by Davis [20], a system that is perceived to be easy to use is also likely to be accepted by users. The third construct that we consider relates to the level of usage of the system. While usage may not be an indicator of user acceptance in the case of captive-use systems [1], the case of banking technologies is different. Banking technologies are used on a voluntary basis. Customers who migrate to these technologies to complete their banking chores will not go to a physical banking location to service the very same chore, and to this extent, this migration can offset some of the requirements at the physical branch. For these reasons, it is important to study the effect of banking technologies on these constructs.

The second goal of our research is to examine how these factors are related with one other, for banking technologies. For this purpose, the theory that we adopt is Davis's [20] Technology Acceptance Model (TAM), which is one of the social-psychological-based theories that has been extensively used to study the relationships among U, EOU and usage. TAM is considered by researchers to be a powerful and parsimonious representation for explaining user-acceptance of information systems (e.g., [55,58]), and it proposes that U and EOU are two constructs that affect people's attitude towards using the system. Attitude directly relates to a user's intention, which will in turn determines usage.

TAM has been well applied in the past to study the user-acceptance of classical IS systems (e.g., word processor, mailing technologies, decision-making systems, etc.). See, for example, the works of Gattiker [24], Venkatesh and Davis [57] and Venkatesh [56]. More recently, TAM has been extended by Chau [13] and by Suh and Han [52] to understand telemedicine and online-banking technologies, respectively. Both these works differ from traditional applications of TAM in two ways. First, the organizational contexts involved (telehealthcare and banking) are different from that in an office automation system such as a word processor. Secondly, healthcare-delivery and online-banking systems encompass not only software factors, but also a number of human factors (e.g., concerning patients, physicians and consumers). This aspect is important to our research, because online banking too involves a number of consumer-behavior issues besides IS ones.

Our empirical data has been collected from students at a Canadian university. We apply General Linear Model (GLM) to study the effects of banking technology on U, EOU and usage, and Structural Equation Modeling (SEM) to examine the model fit and relationships among these constructs. In Section 2, we review literature on online banking from both the customer and IS perspectives. Section 3 outlines the research model selected, while Section 4 describes the research design. Sections 5 and 6 treat the data analysis and the discussion of our findings, respectively. We present concluding remarks in Section 7.

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