Chapter VII
Smart Cards in the Banking Industry: Challenges, Competition, and Collaboration in the 2000’s

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ABSTRACT

This chapter is concerned with the challenges of smart cards as a system innovation in the banking industry. System innovation is the innovation that cannot be adequately introduced by a single entity and is likely to fail unless two or more parties collectively accept the innovation. The study aims to understand the network system nature of smart cards. The comparative study of previous bank card innovations (ATM/cash cards, credit cards, EFTPOS/debit cards) suggests a collaborative approach to reduce the risk of competitive innovation in the case of smart cards. However, the current situation reflects the competition among the powerful players. Unless innovators in the smart card industry see the benefits of collaboration, the diffusion of smart cards may not happen. Innovators may use an empirical analysis in this chapter to define a strategic approach for their plan to compete in the smart card industry.

INTRODUCTION

This chapter is concerned with the challenges of smart cards as a system innovation in the banking industry. System innovation is the innovation that cannot be adequately introduced by a single entity and is likely to fail unless two or more parties collectively accept the innovation. The objective of this study is to understand the network system nature of smart cards. The smart card industry involves the network collaboration whereby the launch of multi-functional financial smart cards needs linkages between players in the industry for the successful delivery and commercializa-
tion. However, the smart card industry at present reflects the situation where Visa, MasterCard/Mondex, Proton World, Microsoft, and Sun Microsystems compete to establish their operating system technology as standard (Visa—the Open Platform, MasterCard/Mondex—Multos, Proton World—Proton, Microsoft—Windows for Smart Card, Sun Microsystems—Java for Smart Cards).

In order to better understand the development of smart cards, the analysis of the previous innovation development of ATM/cash cards, credit cards, and EFTPOS/debit cards is undertaken. The comparative study of the innovation in the cases of ATM/cash cards, credit cards, and EFTPOS/debit cards shows that innovators enter into collaboration to work on the complexities/difficulties of innovation and to maximize the benefits in terms of extended scope of card-based services. The analysis in this chapter provides important insights into the complexities/difficulties of smart cards, the challenges, competition, and collaboration. The competitors launching the smart card innovation may use an empirical analysis in this chapter to define an strategic approach for their plan to compete in the smart card industry.

The chapter is organized into four sections. Following this introductory section, background information is presented about innovations in the financial service industry, and the distinction between the bank cards using mag-stripe technology and smart cards using chip technology. Smart cards with are overviewed with regard to the costs and their advantages and disadvantages. The concepts of innovation system approach, standards, and network externalities effects are also reviewed to lay a background for the discussions of the smart cards electronic payment system. The next section discusses the complexities/difficulties of multi-functional financial smart cards in comparison with those of ATM/cash cards, credit cards, and EFTPOS/debit cards. The analysis of the complexities/difficulties along the process of innovation provides the reasons why innovators in the smart card industry should adopt the collaborative strategy. Studying the development of ATM/cash cards, credit cards, and EFTPOS/debit cards compared with smart cards helps us understand the challenges, future trends, and directions, as well as gives us a foresight on what should be the best way forward in exploiting the smart card innovation. The final section concludes the chapter with a summary of the main findings.

**BACKGROUND**

**Innovations in the Financial Service Industry**

The term innovation deals with both product and process innovation. Product innovation involves a change in the way products are produced in the market, and process innovation involves a change in the technology and process of supply or distribution of a product (Barras, 1986; Tidd, Bessant, & Pavitt, 1997). In the banking industry, the technological innovation designed to cut branch overhead costs or to improve the delivery of a given service is called process innovation, whereas innovation of a new financial product or service is called a product innovation (Smith & Wield, 1988). Often product and process innovation are interactive—as changes of process can lead to changes of product and vice versa. As a result, delivery of production and the generation of consumption often take place conterminously (Miles, 1993; Gallouj & Weinstein, 1997). For example, the development of automatic teller machine (ATM) for cash dispensing provides a new financial service channel because it allows banks (or potential competitors) to own a new relationship between consumers and their banking service providers. The benefits of ATMs are therefore not simply a matter of cheap costs, but the beneficial value of the incremental businesses sustained by the existence of ATMs.
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