A Study on RFID Adoption in the Grocery Retailing Industry of Thailand

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ABSTRACT

Radio Frequency Identification (RFID) is an emerging technology for supply chain management suitable for the retail industry. Large distributing companies such as Wal-Mart, Tesco, and Target have adopted RFID for real-time tracking and efficient order assortment of fast moving products. An agriculture-based developing country with a huge population and strong internal consumption, Thailand has a big grocery retailing industry that provides ample opportunities for the application of RFID technology. Through a questionnaire survey, this study investigated the current status of RFID adoption in the grocery industry of Thailand. The findings reveal that the industry is aware of the potential benefits that RFID may bring but also concerned with the various challenges in implementation. Although companies surveyed are planning to adopt the technology, none have fully implemented an RFID system. This reveals that RFID adoption is still in its infancy in the grocery retailing industry of the country. The major concerns of the firms include high implementation cost and low return on investment, different system designs and multiple standards, and the lack of technical expertise and management experience to ensure success in adopting the technology.

Keywords: Grocery Industry, Radio Frequency Identification (RFID) Technology, RFID Adoption, Return on Investment (ROI), Supply Chain Management

INTRODUCTION

Efficiency and responsiveness are generally regarded as the primary goals of supply chain management (Chopra & Meindl, 2010). To achieve these two objectives, total visibility and full automation are the keys. They help reduce waste in the entire supply chain in terms of excess inventory, labor, space and lead time thereby enhance both the overall efficiency and responsiveness. Radio Frequency Identification (RFID) is an emerging technology that has the potential to improve supply chain efficiency, accuracy and security (Sellitto, Burgess, & Hawking, 2007). It provides synchronous traceability of inventory thereby enables a better control and greater flexibility in managing products throughout the entire supply chain. The technology also helps improve accuracy and productivity in product picking and shelving (Spekman & Sweeney II, 2006; Vijayaraman & Osyk, 2006). Together with automated mate-
rial handling and physical distribution design, RFID can significantly reduce labor, errors, and response time. This will not only lower total supply chain costs (i.e., higher efficiency) but also enhance overall customer service (i.e., improved responsiveness). In fact, the benefits of RFID are widely recognized by many industries such as shipping and distribution, retailing, manufacturing, agriculture and food production, health care, pharmaceutical, government, gaming, and security (Attaran, 2007).

In the grocery retailing industry, variety and volume of products are usually large resulting in higher implied demand uncertainty (Chopra & Meindl, 2010). Firms have been trying their best to make their supply chains efficient and responsive through better inventory management. However, constant fluctuation in market demand has led to inevitable increase in inventory level and related costs (Prater, Frazier, & Reyes, 2005). Therefore, a design that can better match supply and demand and respond quickly to customer needs is always in hot pursuit. Seeing the potential benefits of RFID, large distributing companies such as Wal-Mart, Tesco, and Target have dramatically increased the awareness of RFID in their supply chain by requiring their suppliers to adopt the technology. Wal-Mart, in particular, has been at the forefront of RFID implementation mandating RFID adoption amongst its top 100 key suppliers (Sellitto et al., 2007). A study by Deloitte (2003) predicts that the grocery retailing industry would widely adopt RFID technology for the following reasons:

- The technology increases on-shelf availability and improves customer service thus increases revenue;
- It reduces manual physical works such as scanning of barcodes thus leads to more efficient inventory flow;
- It improves picking accuracy and increases stock visibility thus reduces overall operating cost;
- It optimizes utilization of assets through inventory reduction, just-in-time delivery, and information sharing; and
- It provides other benefits such as shrinkage reduction, quicker response to product recall, better visibility in monitoring international product movements and recycling.