

# Chapter 1

## Point-of-Sale Technologies at Retail Stores: What Will the Future be Like?

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### ABSTRACT

*This chapter provides a review and synthesis of information related to technologies available at the retail POS (point-of-sale) checkout. Several POS technologies available to retailers are described, detailing their benefits and drawbacks for both retailers and consumers. The five technologies described and analyzed are barcode scanning, electronic shelf tags, shelf-checkouts, RFID tags, and fingerprint authentication. The extent to which retailers have implemented these available technologies is described, and perspectives on the future implementation of these technologies and emerging trends are also presented. Findings would indicate that there will continue to be innovations in retail technology at POS, and shopper expectations will continue to change. At the same time, retailers will probably remain cautious in deciding if and when to adopt new technologies. They must be convinced that the innovations will deliver sufficient value to offset their expenses.*

### INTRODUCTION

In the first part of this decade, German-based Metro AG, one of the world's ten largest retailers, unveiled a prototype store of the future. The

retailer's future store opened on April 28, 2003 in the town of Rheinberg, Germany, but at the end of May 2008, it was moved to Toenisvorst. The store places emphasis on presenting and testing the newest technology designed to cut costs for retailers and make shopping more exciting for consumers. Innovations used include technologies

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such as the RFID tag, interactive kiosks, wireless communications, smart registers, scales that recognize fruits and vegetables from digital images, and smart checkouts. At the store, customers are able to experience how cutting-edge technologies and innovative services can make shopping a more convenient and exciting experience.

Metro's future store provides a glimpse into the future of retail shopping and how retailers may manage their stores in the next few years. Metro's expectation is that the new technologies will boost sales and lower costs by making processes more efficient. Management expects customer satisfaction to increase because products will be more readily available, service will become more individualized, and shopping will be more convenient. One of Metro's primary goals is to learn exactly what opportunities and threats are offered by those technologies. In fact, acceptance or rejection of the technologies by their customers will be the yardstick as to whether, how, and to what extent these new technologies will be introduced on a mass scale.

This chapter provides a review and synthesis of information related to technologies available at the retail POS (point-of-sale) checkout. POS technologies available to retailers are described, detailing their benefits and drawbacks for both retailers and consumers. The extent to which retailers have implemented these available technologies will also be presented, along with results and findings of relevant research that has been previously conducted. The impact that the technology has had on shopper behavior will also be highlighted. Perspectives on future implementation of these technologies and emerging trends are also presented, and future research opportunities in this area are suggested.

Most retailers agree that the industry is going through a shakeout period and one way to survive and grow is through the implementation of technology. Today, retailers are continually making decisions about whether or not to adapt new technologies available in the field. As they

wrestle with the decision on whether or not to adopt these new technologies, they must have a full understanding of what the technology involves, how it will affect the way they do business, and whether or not the new technologies will be accepted by consumers. This review and synthesis of information related to POS technology should provide assistance to retailers as they make these decisions in the future.

## **CONCEPTUAL FRAMEWORK**

New technological advances offer new opportunities to retailers for retailers to better manage their firms and enhance the shopping experience for customers, particularly at the point-of-sale (POS). This chapter is designed to deepen the reader's understanding of how technology is being implemented at point-of-sale (POS) and its impact on both the retailer and the customer.

Recent research (Pantano 2010) suggests that retailing can benefit from the implementation of new technologies. In fact, some researchers (Weber & Kantamneni 2002) have found that a retailer's ability to build and defend a competitive position in the market depends to a large extent on the willingness and capacity of the firm to invest in and use technology. Yet, there is a belief by some practitioners that more technology is preferable to less technology; while some researchers (Sethuraman & Parasuraman 2005) suggest that good technology must be "appropriate." In other words, retailers should adopt the technologies that meet their specific strategic aims. Timmor & Rymon (2007), however, found that there has been little effort to measure customer satisfaction with new technological "improvements" and determine what is the most "appropriate" technologies to be used.

More recently, Gil-Saura et. al. (2009) found that not all technological solutions are equally valued by customers. Even though a technology provides benefits, it may not be appreciated by

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