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ABSTRACT

Although on the cutting edge of business technologies, RFID proves to be a difficult process to implement and achieve, despite recent efforts. Two Pittsburgh-based companies were showcased in this case study, namely Mobile Aspects, Inc., a recognized leader in the integration of RFID-related technologies in inventory management processes of large acute care, and Vocollect, Inc., which is especially noted for its voice-recognition software and small hardware platforms used warehousing and partially automated inventory systems. The firms’ goals for implementing inventory management, specific inventory recommendations and changes, comparison of inventory management processes, and selected measures for ensure the quality and security of data transmitted via RFID-based technologies and lessons learned were discussed.

Keywords: Business Strategy, Customer Behavior, Customer Relationship Management, Education-on-Demand, Knowledge-Based Organizations, RFID Systems, Voice Recognition

INTRODUCTION

Operational and Strategic Issues Associated with RFID-Related Technologies

Currently, one of the latest packaging innovations and, perhaps most controversial, in retail stores is radio frequency identification, or RFID. RFID-related technologies, if properly implemented, have the potential to provide many advantages to both the service and manufacturing industries, despite the relatively large cash outlays initially required. Supplying more information than the standard barcode, eliminating the potential for inventory stock outs and reducing theft occurrences are some main concerns of users of such technology, but these concerns can be addressed and resolved. The global RFID market has been estimated to consists of US $5 billion per year and is entering a phase of rapid growth due to huge orders by China for its national ID card scheme, the adoption of e-passport in over 70 countries, and MasterCard for its Paypass™ program (Harrop, 2010; “RFID industry solutions,” 2010; Sirico, 2010), with general purpose of identification and tracking via the utilization of radio waves. RFID-related technologies quickly gained attention because of its ability...
to track moving objects and has been used by thousands of companies for a decade or more ("What is RFID?" 2010).

**Purpose of Present Study**

It is important for both service and manufacturing firms to develop and implement successful strategies that integrate RFID-embedded technological initiatives and information/knowledge practices and procedures, technological innovations, and customer relationship building of trust if they are to survive and, hopefully, prosper. To accomplish this task, two major Pittsburgh, PA-based companies will be explored, through the selected company’s description, background, a brief introduction to an industry overview in terms of information technology needs, partnering solutions, and product and/or service offerings as they related to RFID-based applications. The discussion that follows in the case study section tries to incorporate a customer relationship management (CRM) approach (Anton & Petouhoff, 2002; Smith, 2005a, 2005b) in describing the types of customer-based problems and solution that RFID technologies are designed to address, both in terms of B2C (business-to-customer) and B2B (business-to-business) transactions.

As for the basis of the present study, the purpose of an RFID system is to enable data to be transmitted by a portable device, called a tag, which is read by an RFID reader and processed according to the needs of a particular application. The data transmitted by the tag may provide identification or location information, or specifies about the product tagged, such as price, color, date of purchase, to name a few applications. In particular, asset tracking, manufacturing, supply chain management, retailing, payment systems, and security and access control are illustrations of common uses of RFID ("What is RFID?" 2010).

**IMPLEMENTATION CONCERNS AND CUSTOMER SATISFACTION**

**RFID-Related Theft Prevention Measures**

Each year, as suggested by O’Connor (2004a, 2004b), billions of dollars are lost due to fraudulent merchandise returns and exchanges to retailers. In general, inventory shrinkage resulting from employee theft, shoplifting, administrative and/or related errors, and vendor fraud is a major retailer concern that RFID initiatives can directly address (Green & Khermouch, 2005; Hackman, 2004). Since one of the major goals of implementing RFID is to reduce counterfeiting and theft, many retailers are continuing to invest in this technology in order to enhance its ability to decrease product theft.

Within the supply chain, a main concern is protection of merchandise and store property. For the past thirty years, barcodes and Universal Product Codes (UPC) have been supplying retailers with the necessary information for product recognition, yet theft is still a major issue. RFID can aid in product security because the tags contain more detailed, unique information, which is connected to the item that is being represented. The technology presents manufacturers and retailers with the power to know the “amount of time the item was in transit, the location of the distribution center holding the item, name of the last person to handle to item, and the amount for which the item was sold,” increasing total product visibility (“Fifty uses of RFID in retail,” 2003, p. 2). The opportunity for a loss of sale is decreased as both manufacturers and retailers are aware of the products at all times throughout the supply chain and keep better management of their inventories.

These tags are used on an individual level, case or pallet load, and at times all three may be utilized. In sectors where inventory accuracy is
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