# Chapter 17
# RFID Technology in the Fashion Supply Chain:
## An Exploratory Analysis

**Susana Garrido Azevedo**
*University of Beira Interior, Portugal*

**Helena Carvalho**
*Universidade Nova de Lisboa, Portugal*

## ABSTRACT

*Radio Frequency Identification (RFID) is a new technology that has received considerable attention from academics and practitioners due to its large scope of application, advantages and potentialities. This chapter aims to highlight the potentialities associated with RFID in fast moving Fashion Supply Chain Management (FSCM). The research emphasizes the technological contribution to the Fashion Supply Chain (FSC) such as speed up logistics activities, increased quality, reduced prices, and more responsive improvements for customer satisfaction. The chapter reviews the RFID technology, presents the benefits, disadvantages, and barriers associated with it. To explore the deployment of the RFID technology in the Fashion Supply Chain (FSC), a case study investigation of companies in different FSCM nodes was carried out. A cross-case analysis it is also presented to achieve a deeper understanding about this technology in a fast moving FSCM context.*

## INTRODUCTION

The Radio Frequency Identification (RFID) is the generic name of technologies that use radio waves (Jones, Clarke-Hill, & Hiller, 2005) for automatic identification of objects, positions or persons through electromagnet reception in considerable distances" (So & Liu, 2006). Therefore, RFID is an automatic identification technology, which identifies and gathers data on items without human intervention or data entry (Wyld, 2006).

Although commercial applications of RFID date back to the 1960s, the use of RFID in supply chain management is relatively new. The RFID applications are diverse and are growing in various

DOI: 10.4018/978-1-60960-756-2.ch017

Copyright © 2012, IGI Global. Copying or distributing in print or electronic forms without written permission of IGI Global is prohibited.

sectors for different purposes. In Europe and USA, RFID has been adopted by some major retailers. In 2003, the world's leading retailers, including Metro Group in Germany, Marks & Spencer in the UK, and Wal-Mart in the USA, mandated the use of RFID in tracking supplies (Cover Pages, 2003; Roberti, 2003). Since then, many other retailers in the world have announced adoption plans, including Tesco in the UK, Coles Myer in Australia and Mitsukoshi in Japan (Roussos, 2006). The rapid increase in the number of RFID users suggests a major research opportunity in the retail industry (Sethuraman & Parasuraman, 2005). This technology it is now at a stage, in which there are potentially larger benefits for a wider application, yet barriers remain including a necessary policy framework for enhancing business and consumer benefits while effectively addressing security and privacy issues (OECD, 2006).

The RFID has improved many processes in the supply chain such as handling materials with better efficiency, management of assets more effectively and improving products availability (Reyes & Jaska, 2006). The tracking of items (e.g. assets, containers, reusable bins) has become automated by the extensive use of RFID throughout the supply chain (Tajima, 2007).

The value of RFID technology is particularly visible in fast moving Fashion Supply Chains (FSC's), as the fashion business is characterized by a wide assortment of products, short life-cycles, high seasonality, high volatility, high-impulse purchasing and complicated distribution and logistics operations (Christopher, Lowson, & Peck, 2004). Peterson, Chang, Wong and Lawrence (2010) used the term "fast fashion" to describe a new business model where the tendencies are fresh products, shorter life cycles and faster production. This business model puts significant pressure for rapid delivery, high quality products, and low prices for each supply chain segment. In the highly competitive retail environment, the availability for a certain product category (or a specific item) is a relevant source of value to customers, since there are huge penalties due to out of stock of the current season "must-have" advertised items (Brun & Castelli, 2008). To respond to customer needs, "time compression" and flexibility should be developed along the whole supply chain. Castelli and Brun (2010) also stress the need to align operations of different FSC members along the supply chain to enhance information exchange, through the use of new communication tools and process coordination practices. Despite the potential value of RFID technology in FSCM, Loebbecke (2007) stress that 'the actual examination of the influences and impacts of RFID has been less well documented.' Moreover, prior works does not have a holist perspective of the RFID deployment in FSC, only provide some insights about particular issues of RFID deployment in FSC, like, potential benefits (Kwok & Wu, 2009), implementation issues (Kwok & Wu, 2009; Loebbecke, 2007), RFID technology economic value (Bottani, Ferretti, Montanari, & Rizz, 2009), cost-benefit sharing issues (Bensel, Gunther, Tribowski, & Vogeler, 2008) or do it only at the retailer level (Moon & Ngai, 2008). The present work objective is to present a holistic perspective on RFID value in FSC using empirical examples from case studies related to the RFID deployment by companies belonging to FSC.

This Chapter aims to explore the deployment of RFID technology in fast moving Fashion Supply Chain Management (FSCM). It intends to investigate the real benefits, disadvantages and barriers felt by companies belonging to a fast moving FSC with the RFID technology deployment.

The chapter is organized as follows: an introduction to RFID with a brief explanation of the main characteristics of technology is presented, and then the benefits, disadvantages and barriers associated to the RFID deployment in supply chain are illustrated. After this, a deeper analysis on the RFID deployment in FSC logistics activities is described, followed by a case studies section to demonstrate the RFID deployment in fast moving

22 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/chapter/rfid-technology-fashion-supply-chain/55218

## Related Content

Supply Chain Coordination through a Revenue-Sharing Contract with Two Kinds of Fuzzy Demand
Junyan Wangand Yuan Ren (2017). *International Journal of Information Systems and Supply Chain Management (pp. 1-17).*
www.irma-international.org/article/supply-chain-coordination-through-a-revenue-sharing-contract-with-two-kinds-of-fuzzy-demand/188651

Driving Circular Economy Through Sustainable Supply Chain Management: Designing Framework Through Literature Review
Benson Ruzive, Reason Masengu, Chenjerai Muchenjeand Badriya Al Balushi (2023). *Handbook of Research on Designing Sustainable Supply Chains to Achieve a Circular Economy (pp. 470-492).*
www.irma-international.org/chapter/driving-circular-economy-through-sustainable-supply-chain-management/322260

Prioritizing the Enablers of Construction Supply Chain in the Industry 4.0 Environment
Vivek Agrawal, Seemant Kumar Yadav, R. P. Mohantyand Anand M. Agrawal (2020). *Leadership Strategies for Global Supply Chain Management in Emerging Markets (pp. 147-172).*
www.irma-international.org/chapter/prioritizing-the-enablers-of-construction-supply-chain-in-the-industry-40-environment/257661

Demand Chain Strategy and Chinese Firm Performance: Role of IT Analytic Capability and Product Life Cycle
Bingfeng Bai, Junjun Gaoand Weili Yin (2021). *International Journal of Information Systems and Supply Chain Management (pp. 94-119).*
www.irma-international.org/article/demand-chain-strategy-and-chinese-firm-performance/287380

Key Issues in the Implementation of Electronic Customer Relationship Management in the Australian Hospitality and Tourism Sector
Chad Lin (2013). *Supply Chain Management: Concepts, Methodologies, Tools, and Applications (pp. 1582-1605).*
www.irma-international.org/chapter/key-issues-implementation-electronic-customer/73418