ENSURING PHARMACEUTICAL INDUSTRY SAFETY THROUGH RFID

Alina Chircu, Bentley University, USA, achircu@bentley.edu
Eldar Sultanow, XQS, Germany, sultanow@gmail.com

ABSTRACT

Keywords
Case study, IT-supported business processes, RFID implementation, pharmaceutical supply chain

Study Description

The safety of products, services and patients is a critical issue in the pharmaceutical environment. On the one hand, counterfeit medicines pose a growing threat; on the other hand, all medicines require a high level of quality assurance for manufacturing, transport, storage and administration. Accordingly, safety in the context of both materials management and supply management is crucial for protecting patients. This article investigates how Radio Frequency Identification (RFID), a communication technology based on radio waves [1], can be used to improve safety in the pharmaceutical industry. RFID has been successfully implemented in a variety of settings; from consumer packaged goods supply chains to libraries and hospitals in throughout the world [2, 5, 8]. RFID seems particularly well fitted for healthcare environments, where it is poised to become the next wave of disruptive innovation [6] by providing real-word awareness [3,4]. This paper extends and complements previous RFID studies by analyzing an RFID platform which is already used productively in practice, and by presenting a novel view of safety from multiple stakeholder perspectives in the pharmaceutical supply chain. The study answers the call for timely research on healthcare information systems and technologies, a contemporary topic of increasing importance among information systems researchers in general and among IACIS members in particular as evidenced by the inclusion of sessions on health information systems research and applications in the most recent IACIS conference.

Methodology and Analysis

The paper uses a revelatory case analysis methodology [7]. The context is RFID implementation in Germany, which is the largest country in Europe (with 82 million people) and the world 3rd largest pharmaceutical market, with EUR 41.5 billion in sales in 2008. The study focuses on a RFID platform developed by German firm XQS Gmbh and used successfully for the tracking of oncology and stem cells medication. This particular implementation of RFID technology can serve as a revelatory case because of its documented track record in trials for tracking medication over the last several years. The study uses semi-structured interview data collected by one author from several supply chain stakeholders (manufacturer, wholesaler/distributor, pharmacy, and hospital / clinic) which have all participated in RFID trials using the XQS solution. The analysis was performed by a second researcher who iteratively coded the data and compared it with theoretical insights. The results were verified for face validity by the interviewer and reviewed for accuracy by an XQS senior executive. Thus, triangulation is ensured by considering multiple points of view from different supply chain participants and from different researchers [7].

The interview analysis reveals that the XQS solution for RFID implementation in the supply chain has been positively received at all levels of the supply chain, with significant benefits being cited by all supply chain participants. Having unique product codes embedded in RFID chips affixed to medication increases safety by enabling accurate tracking and preventing counterfeiting. The RFID system automates the shipping and receiving processes, eliminating errors that were common in the previous manual-based barcode environment, strengthening controls, and reducing labor and technology costs.

Implications and Conclusions

This paper confirms that pharmaceutical supply chain safety can be increased when supply chain participants adopt RFID. The analysis reveals that perceptions of safety are higher at the ends of the supply chain – at the manufacturer and the clinic level – as the RFID technology increases the trust that other supply chain processes are secure. RFID technology enables all supply chain participants to
access core supply chain process knowledge - even for processes outside of their control – and make informed decisions to ensure the safety of the ultimate supply chain customers – the patients. This paper advances the current literature on RFID implementation and benefits by providing an evidence-based evaluation of an integrated, supply chain, end-to-end process that is largely missing from current RFID research [5, 8]. For practice, this paper provides insights on early adopters, which can be used to demonstrate benefits and promote further adoption. Future research can explore alternative RFID platform models or RFID implementation in the context of other countries as well.

REFERENCES