

Chapter 31

The Use of Mobile Technology in Management and Risk Control in the Supply Chain: The Case of a Brazilian Beef Chain

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ABSTRACT

The use of mobile technologies is important for Supply Chain Management (SCM) because these technologies allow for a ubiquitous flow of information, higher agility and risk reduction in supply chains. In food markets, these issues are particularly relevant due to food safety risks. The main goal of this paper is to analyze the use of mobile technology for management and risk control in the Brazilian beef supply chain, since Brazil is one of the main producers and beef exporters in the world. The research method was a single case study. Results show the actual level of mobile technology use; drivers and barriers to mobile technology adoption and how mobile technology is applied to beef traceability and risk reduction along the chain. The authors propose a framework that links the issues of mobile technology use for SCM and risk control, considering the context of a developing country such as Brazil.

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INTRODUCTION

Mobile technology is everywhere and its extensive use, together with wireless networks and other technologies, such as Radio Frequency Identification (RFID) and Global Positioning System (GPS), has spawned new concepts such as mobile business (Kalakota & Robinson, 2001; Scornavacca & Barnes, 2008) and enterprise mobility (Basole, 2008; Sorensen, 2011).

Mobile Supply Chain Management (m-SCM) is gaining recognition for cost reduction and performance improvement (Eng, 2006). The application of mobile and wireless technology to SCM allow firms to promptly identify and meet customers' needs, as well as to obtain processes and product traceability and operational efficiency along the chain (Tseng et al., 2011; Ngai et al., 2011, p. 233). Although the interest of managers in this subject (Salo, 2012), there is still few research focusing on mobile technology for SCM from a management perspective, rather than only a technology one.

Studies about the use of mobile technologies for SCM in developing countries are even scarcer, despite the growing importance of these countries for global economy. In food markets, this issue is particularly relevant because operations of several firms have increased food safety risks in global food chains (Manning & Baines, 2004) and developing countries are important as global food suppliers (Roth et al., 2011). Heeks (2010) highlights the importance of mobile technology for developing countries but points out a set of future research issues, arguing that we know little about the implications of mobility.

The main goal of this article is to analyze the use of mobile information technology for management and risk control in a Brazilian beef supply chain. We attempt to understand the level of mobile technology use along the chain, drivers to mobile technology adoption, barriers to adoption (considering the local context), as well as how mobile technology has been applied to beef traceability and risk reduction throughout the chain.

In this study, traceability is the ability to maintain credible custody of the identification of animals or animal products through various steps within the food chain, from the farm to the retailer (Vieira & Traill, 2007; Ribeiro et al., 2010; Schroeder & Tonsor, 2012). This process is mandatory for international beef trade.

Brazil is one of the world's largest beef producers and exporters. There is previous research focusing on traceability as a method of food safety control and regulation for the Brazilian beef chain (Zylberstajn & Machado Filho, 2003; Vieira & Traill, 2007), and on the use of RFID in beef supply chains located in developed countries (Schwägele, 2005; Ribeiro et al., 2010). However, there is still a need to understand how this emerging country and large beef exporter is using mobile technology to manage its supply chain and comply with traceability requirements. In this paper, we propose a theoretical framework, based on our research results, that links the issues of mobile technology use for SCM and risk control, taking into account the context of a developing country such as Brazil.

In the next sections of this article, we present a literature review; the research method, followed by the research results, discussions, the theoretical framework and final remarks.

LITERATURE REVIEW

The literature review focuses on mobile technology use for SCM, supply chain risk, and the use of ICT (Information and Communication Technologies) in developing countries.

Mobile Technology Use in SCM

Enterprise mobility is the application of mobile and wireless technologies in organizational processes. It encompasses services in terms of *intimacy* (in the user – technology relationship), *connectivity* (linking people to remote others or information,

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