Chapter 4.15
Enabling the Glass Pipeline:
The Infusion of Mobile Technology Applications in Supply Chain Management

Umar Ruhi
Wilfrid Laurier University, Canada

Ofir Turel
McMaster University, Canada

ABSTRACT

In recent years, the prospect of information exchange independent of time and place has been a compelling driver for organizations worldwide to adopt mobile technology applications in their various business practices. In particular, the application of mobile technology in Supply Chain Management has drawn widespread attention from researchers and practitioners who endorse adaptive and agile supply chain processes. This chapter discusses the applications of mobile technologies in various areas of supply chain management and the potential benefits of those technologies along the dimensions of reduced replenishment time and transactions and billing cycles. Among other discussions, the role of mobile procurement, inventory management, product identification, package tracking, sales force, and field service automation technologies is highlighted. To substantiate the basis for adopting mobile technologies for supply chain management, different market drivers for mobile applications are exemplified and applied to the three macro-level processes of supplier relationship management, internal supply chain management, and customer relationship management; a resulting typology of mobile supply chain management applications is presented.

INTRODUCTION

The nature of competition is shifting away from the classic struggle between companies. The new competition is supply chain vs. supply chain. (Taylor, 2003, p. 3)

In recent years, we have seen various organizations from different industries focus their competitive strategies on improving their supply networks rather than concentrating on directly

contending with specific companies. Companies such as Wal-Mart, Dell, and Proctor & Gamble not only have made significant headway in optimizing their own supply chains, they also essentially have redefined the way business is done in their particular industries. Their competitors have had to follow suit in order to maintain their own competitive position in the marketplace.

A major factor that has contributed to more efficient supply networks is the increasingly unhindered and efficient flow of information within and among supply chain partners. Several researchers and practitioners have commented on the importance of information flow in effective supply chains (Chopra & Meindl, 2003; Handfield & Nichols, 2002; Kalakota, Robinson & Gundepudi, 2003). Consequently, much has been said about the role of technology in enabling effective supply chains (Holten, Dreiling, Muehlen & Becker, 2002; Knolmayer, Mertens & Zeier, 2002; Poirier & Bauer, 2000).

Mobile technologies and applications offer an advanced level of efficient and effective communications among business partners in supply chains. These applications augment the static nature of their predecessor, e-commerce, phone, and fax-based technologies, by adding flexibility and spontaneity to extant business processes. Technologies in mobile procurement, inventory management, product identification, package tracking, sales force, and field service automation are expected to change the current landscape of Supply Chain Management (SCM). It is expected that mobile technologies will bridge the functionality gap in traditional Electronic Data Interchange (EDI), Enterprise Resource Planning (ERP) and Web-based SCM technologies by providing the end-to-end transparency that can help businesses perform better through improved supply chain planning and execution (Kalakota et al., 2003).

In this chapter, we provide a value proposition for mobile SCM technologies and applications. By highlighting the benefits of the latest mobile applications, this chapter aims to explicate the role of these technologies in transforming integrated and collaborative supply chains into adaptive supply networks. We start this discussion with our working definition of SCM, which will be the gate to our analysis of various technology applications. Following that, we discuss the current state of information technologies in SCM and subsequently rationalize the business drivers for implementing mobile SCM technologies. This is followed by an elaboration of a typology of mobile SCM technology applications. Our conclusion and ensuing inferences follow after a discussion on the future outlook for mobile SCM technologies vis-à-vis other SCM information systems.

SUPPLY CHAIN MANAGEMENT: A WORKING DEFINITION

There are as many definitions of SCM as there are publications, which is quite enormous within the supply management literature. Furthermore, the terminology used to describe the concept or idea behind SCM is interchangeably used in various contexts to refer to the same thing. For example, supply chains, supply networks, and supply webs often are used to describe the same idea—coordination and collaboration across business partners. Recently, however, there is an increasing tendency to use the terms *supply networks* and *supply webs* as opposed to the notion of *supply chains*. The advantage of using the former terms over the latter, is to emphasize that the links among business partners are not linear and sequential but are, instead, dynamic, interdependent, and flexible (Bovet & Martha, 2000; Murphy, 2000; Rayner, 2004).

In this chapter, we use the terms *supply chains* and *supply networks* interchangeably, with the proviso that the nature of relationships among business partners is, indeed, more than just linear and sequential. As highlighted in the introduction and for the purpose of this discussion, we adopt a definition of SCM that incorporates the manage-

Related Content

Context-Aware Approach for Restaurant Recommender Systems

Haoxian Fengand Thomas Tran (2019). *Advanced Methodologies and Technologies in Network Architecture, Mobile Computing, and Data Analytics (pp. 324-341).*

www.irma-international.org/chapter/context-aware-approach-for-restaurant-recommender-systems/214625

Improving Energy Efficiency and Throughput in Heterogeneous Mobile Ad Hoc Networks

Manu.J. Pillaiand M. P. Sebastian (2009). *International Journal of Mobile Computing and Multimedia Communications (pp. 48-60).*

www.irma-international.org/article/improving-energy-efficiency-throughput-heterogeneous/4069

A Collaborative Replication Approach for Mobile-P2P Networks

Anirban Mondal, Sanjay Kumar Madriaand Masaru Kitsuregawa (2010). *International Journal of Handheld Computing Research (pp. 75-97).*

www.irma-international.org/article/collaborative-replication-approach-mobile-p2p/43605

Interference Modeling and Analysis in Cognitive Radio Networks

Yanxiao Zhao, Bighnaraj Panigrahi, Kazem Sohrabyand Wei Wang (2013). *International Journal of Handheld Computing Research (pp. 1-15).*

www.irma-international.org/article/interference-modeling-and-analysis-in-cognitive-radio-networks/103150

Location-Based Social Networks

Declan Traynorand Kevin Curran (2013). *Mobile Services Industries, Technologies, and Applications in the Global Economy (pp. 243-253).*

www.irma-international.org/chapter/location-based-social-networks/68662