

Chapter 51

Global Supply Chain Management Organization at Siemens in the Advent of Industry 4.0

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ABSTRACT

Contemporary supply chain management involves integration, collaboration, networking, the Internet as a channel. The latter is about to be disrupted by the Internet of Things and industry 4.0. Contemporary Supply Chain Management involves supplier integration over product lifecycle. This creates structural organizational opportunities for Global Supply Chain Centers, organized as a corporate functional unit for an organization, a shared service center or a Business Process Organization that manages supply chain intermediation. The opportunities of such units are unravelled, the major of which: closing bulk contracts at a large discount price, especially for commodities; closing contracts with suppliers to assure supply availability and quality; economies of scale; complex product over lifetime advantages. These are possible for a large corporation or a Business Process Organization. This chapter aims to explore, analyze and evaluate the construction of a Global Supply Chain Management at Siemens since 2009 to date in the advent of Industry 4.0 promoted by Siemens.

INTRODUCTION

The new version of The Internet of Things is promoted to generate new business models. One of these business models is Industry 4.0, the concept of the digital enterprise, which is promoted by The European Union Horizon 2020 innovation program (CREMA, 2015), by the German government (Bundesministe-

DOI: 10.4018/978-1-7998-0945-6.ch051

rium fur Wirtschaft und Energie, 2011), by companies such as Siemens (Siemens, 2013) and Bosch (Mc Kinsey, 2013), by consultants such as Mc Kinsey (2013). Key to this approach is supplier integration over all stages of product lifecycle: concept, product design, production development, production execution (Siemens, 2016; Oracle, 2012). The proponents of the Industry 4.0 model, among whom Siemens, tie the emerging industrial paradigm to Product Lifecycle Management software sold by a market Boston Consulting Group claims is formed of Dassault Systems, Siemens, PTC, SAP and Oracle (as cited by Bergsjö, 2009). The Industry 4.0 model uses the Internet of Things and is promoted as disruptive and evolutionary. The emerging business model for manufacturing has implications on supply chain management that we aim to analyze. These implications stem from integrating suppliers across the product lifecycle (Siemens, 2016; Oracle, 2012). It is in this context and on this ground that we analyze the latest trends in supply chain management and the practice of the Product Lifecycle Management software market leader, Siemens, in terms of global supply chain management organization.

The goal of this article is to analyze the capabilities of a supply chain service provider in the established business environment and in the emerging Industry 4.0. We base this on literature review and the case study of Siemens practice in this field. We begin with the general context, the emerging Industry 4.0 concept, and its impact on supply chain activities. We perform a literature review about supply chain intermediation organization as a separate unit in an organization. We begin with a theoretical literature review of the trend toward a new organizational paradigm which is based on the exploitation of intangible assets and encompasses related units for customer relations (key account management), research and development (project units) and in our proposal units for managing supplier relations (global supply chain management organization). Based on the literature review, we note that the latter may be a service provider for strategic supply chain management, an organizational innovation which comprises the internal version of a supply chain intermediary. We scrutiny supply chain management literature for the capabilities of supply chain intermediation, and find ‘‘classical’’ trends related to category purchasing, bulk contracts, purchase price negotiation and price risk mitigation. Furthermore we find trends ‘‘recent’’ trends in theoretical literature that pertain to the digital enterprise, one of which is supplier integration over product lifecycle, which is assessed by a Pricewaterhouse Coopers (2013) study as the most sophisticated form of supply chain management and part of the digital enterprise proposal. Supplier integration over product lifecycle means integrating global supply chain management in product design via the provision of supplier market knowledge and global information systems (O’Brian, 2012) by the intermediary; integrating global supply chain management in product planning via consultancy work on behalf of the intermediary regarding quotations and contract negotiation (The Chartered Institute of Procurement and Supply, 2016b); performing integrated business planning in the extended enterprise (The Chartered Institute of Procurement and Supply, 2016b; SAP, 2015); designing a global supply chain network (Creazza and Dallari, 2010). We analyze the capabilities reviewed in literature and their suitability for an intermediary. We choose Siemens as a case example on the ground that Siemens is the market leader for the Industry 4.0 model in construction. We trace these strategic capabilities in the practice of Siemens, and perform a case study based on the information provided by Siemens practice in global supply chain management, mainly annual reports. We explore, analyze and synthesize this information and compare it to the theoretical capabilities previously identified. We assess that the digital enterprise is an emerging trend that deserves further research.

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