Chapter 4
Improving Construction Supply Chains through Collaborative Modelling, a case of South Africa:
Construction Supply Chain and Collaboration Modeling

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ABSTRACT

This chapter report on some of the challenges faced and successes achieved during the construction of the recently completed Department of Environmental Affairs (DEA) headquarters in South Africa. Qualitative interviews where conducts with five (5) professionals which were part of the construction supply chain team that completed the DEA project in South Africa. Findings summary were that the South African construction industry exists in a very dynamic and volatile environment with common challenges as evident in other countries. This challenge, necessitates the use of collaborative means of managing the various phases of the supply chain. It was also found that the use of collaborative models such as Public Private Partnership (PPP) can prove rewarding when stakeholders involved in a project have an understanding of the model and its dynamics. This chapter contributes to the use of PPP collaborative models in construction project delivery in South Africa.

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INTRODUCTION

Supply Chain Management (SCM) is a research area that has attracted the attention of many researchers for more than 20 years. According to Kopczak and Johnson (2003) and Kulp et al. (2004), developments of supply chain management (SCM) in the 1990s have been broadly studied in a range of research areas such as: information technology (IT), product variety, supply-chain costs, real-time information sharing, coordination, coordinated production planning, replenishment scheduling, and decision-making among trading partners. Likewise, Subramani, (2004) and Wang et al. (2006) further informed that SCM has extended from the focal firm's benefits to the entire supply chain members' benefits, with assistance and support from major manufacturers or retailers to reduce operational costs, improve customer service, and result in a comparative advantage for supply chain members.

However, SCM in the construction industry, is an inter-linked set of relationships connecting the construction industry client, suppliers, perhaps through a number of intermediate stages such as manufacturing, warehousing and distribution. The reason or considering the process as a single chain is so that the flow of materials, money and information can be effectively managed to meet the construction requirements. Also, Narasimha, Kamath and Roy (2007) informed that SCM is primarily concerned with cost effective way of managing materials, information and financial flows from the point of origin to the point of consumption to satisfy the clients' requirements. Likewise, La Londe (1998) posited that SCM is the delivery of enhanced customer and economic value through synchronized management of the flow of physical goods and associated information from sourcing through consumption. Whilst, Johnston (1995) further conceptualised SCM as the process of strategically managing the movement and storage of materials, parts and finshed inventory from suppliers, through the firm and to customers. The various definitions that have been proposed by researchers signify that SCM stipulates organisational restructuring, extended to the achievement of a company-wide collaborative culture. The key objective of supply chain management is to offer better underlying value to a client than the competition. This is done through a combination of: defining client value; establishing supplier relationships; integrating activities; managing costs collaboratively; developing continuous improvement; mobilising and developing people

Dubois and Gadde (2000) and Bankvall et al. (2010) posted that there are at least three types of supply chains associated with construction projects, which includes: temporary supply chains, framework specific supply chains and company strategic supply chains (permanent supply chains). However, Vrijhoef and Koskela (2000) contended that construction specific SCM (cSCM) is about the supervision of inter and intra-firm interactions in a construction project and hence, suggested a cSCM framework that is concerned with the interface between the supply chain and construction site; reducing costs related to logistics, lead-time and inventory on specific project supply chains; transferring activities from the site to earlier stages of the supply chain; and, integrated management of the supply chain with emphasis on improvement of supply chain and the site production (Pala, et al, 2014). However, Pala et al (2014) informs that an idea way to oversee construction supply chain is through a relationship-centric perspective where the aim is to maintain an effective operational and strategic engagement with suppliers. In this study, the improvement of construction supply chains through collaborative modelling is considered. This chapter report on the challenges and successes which were achieved in the construction of the recently completed Department of Environmental Affairs (DEA) headquarters in South Africa.