

# Supply Chain Collaboration: A Conceptual Maturity Model

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## INTRODUCTION

We live in an era of global competitiveness with supply chain (SC) focus, and within the dynamics and global nature of today's economy where competition is no longer between organizations but between supply chains, coordination and collaboration become key to effectiveness, agility and competitiveness (Kim, 2006; Trkman, McCormack, & Ladeira, 2010; Akyuz & Gursoy, 2010; Cao & Zang, 2013; Lehoux, D'Mourse, & Langevin, 2013). Collaboration in the context of SC is an amorphous meta concept that has been interpreted in many different ways by both organizations and individuals, academic definitions focusing on the business-to-business (B2B) Internet-based technologies while practical definitions having a wider scope (Wang, 2006). In this chapter, the confusion, interchangeable and ambiguous use of collaboration terminology is tried to be enlightened via literature taxonomy and also a collaboration maturity model is introduced.

Arshinder and Deshmukh (2008) list collaboration definitions in their study as: (a) joint planning, joint product development, mutual exchange of information and integrated information systems, cross coordination on several levels in the companies on the network, long-term cooperation and fair sharing of risks and benefits, (b) two or more independent companies working jointly to plan and execute supply chain operations with greater

success than when acting in isolation, (c) a win-win arrangement to provide improved business success for both parties, (d) a strategic response to the challenges that arise from the dependencies. It is evident that the concept is multi-dimensional, going much beyond simple transactional integrity among systems and it is well-proven to be directly related with various ideas such as SC cooperation, integrity and visibility. The related literature also provides very strong support regarding the benefits accruing from collaboration as well as positive correlation with SC performance, and the critical capabilities such as agility and flexibility (Akyuz & Gursoy, 2010; Sanders, 2007; Arshinder & Desmukh, 2008; Cao & Zang 2013; Wiengarten, Humphreys, McKittrick, & Fynes, 2013; Kim & Nettesine, 2013).

The collaboration concept is explored with the related concepts and terminologies in the literature. In the next section, the relationships and precedence among collaboration-related terminologies, and existing maturity models are discussed by highlighting the ambiguities and interchangeable use. Motivated by the lack of consensus on terminology and the maturity stages of the existing maturity models, a conceptual model is developed via a mapping of the model stages onto various SC processes. The conceptual maturity model provides process-based, staged and precise descriptions of chain-level evolution of collaboration for SC researchers.

## BACKGROUND

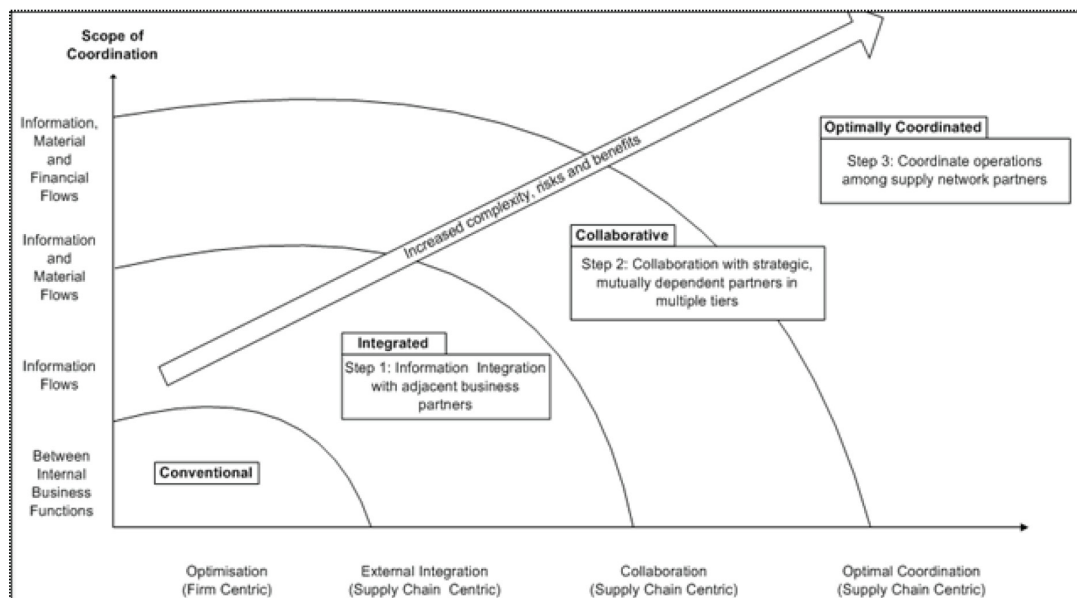
The SC collaboration literature clearly highlights that it is closely interrelated to the terms of communication, cooperation, coordination, integrity, partnership, visibility, trust and synchronization. The terms of “cooperation,” “coordination,” “collaboration” and “integrity” are interchangeably used and sometimes refer to different evolutionary stages along a continuum of dependency among SC partners. The terminology of “intra- and inter-organizational coordination” is preferred while discussing the opportunities of the Internet-based information systems (Akyuz & Rehan, 2009; Chen & Chen, 2005; Arshinder & Deshmukh, 2008; Kelle & Akbulut, 2005).

Thompson and Sanders (1998) put forward the continuum of ‘competition → cooperation → collaboration → coalescence’, considering coalescence as the highest level of integrity and joining forces. Kim et al. (2004) refer to the Speakman, Kamauff, and Myhr (1998), which use “cooperation,” “coordination” and “collaboration” as three different stages to define the transition to “collaboration.” In their classification, cooperation refers to long term contracts. Coordination

is associated with information linkages and collaboration is associated with joint planning, integration and sharing.

This transition clearly emphasizes that ability to cooperate leads to coordination among partners, which in turn evolves into the collaboration. In this classification, “joint planning” appears as a critical ability determining collaboration and the wording “integrity” is highlighted. Based on Christopher (2005) and Werner (2008), Ivanov and Sokolov (2010) define the organizational levels as ‘open market negotiations → cooperation → communication/integration → coordination → collaboration’. In this categorization, collaboration is again treated as a more enhanced concept than cooperation, integration and coordination. However, it is striking that communication is used interchangeably with integration, the idea which the authors do not agree and also contradicting with Speakman et al. (1998). The authors hold the opinion that the integrity concept is much beyond “linkages” and “communication channels.” Based on Cooks and Delattre (2001), Hoppe (2001) uses the term “coordination” and discusses the stages of coordination, as depicted in the Figure 1.

Figure 1. Steps in supply network coordination (Based on Cookson & Delattre, 2001)



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