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Simulation-based modeling approach for collaborative supply chains from the perspective of apparel industry

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Supply chain collaboration has become a widely spoken and researched topic in every industrial standpoint. The depth and the width of the chain partners and activities are rapidly increasing, and have become difficult to achieve the best efficiencies by performing as isolated partners. Although the word collaboration is easy to understand, achieving it practically has become a difficult and complex task. Numerous researchers have investigated in areas such as identifying collaborative enablers, barriers of collaboration, developing indexes to measure collaboration, collaboration vs performance. However, a very few research studies have focused on understanding the practical aspect of improving collaboration in supply chains. Therefore, in this study the authors have utilized a simulation-based approach to assess how collaborative practices among different partners in the supply chain affect the collaboration level of an industry and time dependent variants for an industry to achieve maximum benefits of collaboration. The simulation models were developed using *Netlogo* open source modelling platform, focusing on three types of agents in the supply chain where the suppliers, manufacturers, retailers and behavior of these different partners was modeled. The study utilizes the apparel industry as the tested and thus, the *Netlogo* simulation models determine the effects of collaborative practices across those aforementioned partners. The outcomes of this study will facilitate the identification of critical factors which the industry should focus on, in order to enhance the collaboration in supply chains in apparel industry, and that can be further improved to enhance the collaboration of various other industries as well.

Keywords: Agent-based simulation, Apparel industry, Supply chain collaboration