Assessment of Simulation Techniques for the Supply Chain Risk Management Organisation

Sebastian Grzesch[1], André Krischke[2]

[1]Newcastle Business School, City Campus East, NE18ST Newcastle upon Tyne
[2]Fakultät für Betriebswirtschaft - Hochschule München, Am Stadtpark 20, 81243 München

Abstract

This paper evaluates the application of simulation methods for Supply Chain Risk Management (SCRM). Although supply chain managers clearly see the importance of a comprehensive process for risk management, mainly qualitative and analytical tools are applied - in most cases limited to the own enterprise - leaving out important interface and network aspects.

This seems to be due to a missing risk management culture but also to the fact that analytical tools for risk management mainly focus on mapping the structure and categorizing past events rather than predicting the possible response of the supply chain to external and internal risks. Therefore risk identification in the industry often seems to be based more on anecdotal or case based research than on predicting the specific risk of the respective supply chain (Melnyk 2008). Moreover the tactical and strategic implications from the risk analysis are rather difficult to communicate to management, leading to unnecessary long response times. To foresee the behaviour of a dynamic and complex systems like supply chains, existing tools as Supply Chain Mapping, Bottleneck Identification and Critical Path Analysis have to be taken a step further. Simulation seems to be a promising extension of the exiting tool set, as it allows foreseeing the possible range of responses of the supply chain system, and makes communication to management more convincing and hence faster.

This paper presents an exemplary simulation model incorporating different simulations methods, to evaluate the application at different stages in the supply chain management risk process. In a next step the presented model will be applied to a real world example, ideally within a business, which already applies a variety of analytical methods for risk management, with which the simulation approach can then be compared.