

Improving Logistics Efficiency in Supply Chains using a Supply Chain Improvement System (SCIS)

Herwig WINKLER¹, Thomas WURZER¹, Clemens KUSS¹ and Gottfried SEEBACHER¹

¹ Alpen-Adria-Universität Klagenfurt/Department of Production Management and Business Logistics, Klagenfurt, Austria

Abstract—In recent years, scientific and practical studies have increasingly focused on attempts to increase logistical efficiency. Improved or even optimised logistics processes minimise non-value-added time, reduce overstocking, and improve capacity utilization. It is important to fully utilise the inherent potential of logistics to add value without incurring temporal, material or organisational waste. The efficient use of logistics can result in decreases in total and per-unit costs. A prerequisite is analysis of in-house and cross-company activities using standardised Key Performance Indicators that complement modern Supply Chain Management. However, despite apparent efforts, many crucial problems remain unsolved.

Although internal logistics processes and value streams are now successively being focused, analysed, and evaluated, the analysis of cross-company operations has apparently been largely neglected. Companies that are a part of a globally competing Supply Chain have not applied the appropriate methods and instruments that are required to measure Supply Chain performance and have not utilised the relevant concepts and soft- or hardware environments that scientific research recommends. A thorough literature review conducted in 2012 revealed a severe shortage of research on this topic. Therefore, to improve efficiency along the entire Supply Chain, we address this deficit in this study, in which we systematically present the first draft of a Supply Chain Improvement System and offer insights into its requirements, functionalities, and expected practical limitations. During the development of its conceptual design, pre-existing efficiency measurements were adapted to SC requirements and, according to three different Supply Chain Improvement levels, complemented by distinctive functionalities within the fields of production logistics, transport, handling, and warehousing.

Key words—logistics efficiency, performance measurement, simulation, Supply Chain Improvement.

AUTHORS

Herwig Winkler is head of the Department of Production Management & Business Logistics at the Alpen-Adria-Universität Klagenfurt, Klagenfurt, Austria (e-mail: herwig.winkler@aau.at).

Thomas Wurzer is researcher at the Department of Production Management & Business Logistics at the Alpen-Adria-Universität Klagenfurt, Klagenfurt, Austria (e-mail: thomas.wurzer@aau.at).

Clemens Kuss is researcher at the Department of Production Management & Business Logistics at the Alpen-Adria-Universität Klagenfurt, Klagenfurt, Austria (e-mail: clemens.kuss@aau.at).

Gottfried Seebacher is researcher at the Department of Production Management & Business Logistics at the Alpen-Adria-Universität Klagenfurt, Klagenfurt, Austria (e-mail: gottfried.seebacher@aau.at).

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