

Chapter 68

Using a Supply Chain Improvement System (SCIS) to Increase Supply Chain Efficiency

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ABSTRACT

Because of the reduced vertical range of manufacturing in recent decades, the complexity of supply chain relationships has increased dramatically. To address this complexity, and with the current pressure of competition in today's business environment, improving process efficiency has become an objective for companies and supply chains. Currently, there are no concepts available that enable evaluating and improving efficiency along entire supply chains. Based on this deficit, the authors developed the Supply Chain Improvement System (SCIS). This chapter will present the theoretical concept of the SCIS and provide the reader with two case studies that consider how to apply it in entrepreneurial practice. Beginning with offering some background information, current deficits in evaluating the efficiency of supply chains will be noted. Proceeding with the principles, the chapter will give a deeper insight into the structure of the concept.

INTRODUCTION

The vertical range of manufacturing has decreased dramatically in recent decades. Processes that were once executed by a single company a short time ago are now allocated across many different companies worldwide to utilize specific cost advantages (Tomlin, 2014, pp. 509-510). This situation leads to increased complexity in the relationships between buyers and suppliers along supply chains. To maintain their global competitiveness in today's highly dynamic and flexible business environment, supply chains are forced to sustainably improve their efficiency. Thus, improving process efficiency along entire sup-

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ply chains has become an objective for companies. To ensure high process efficiency, it is important to constantly reduce losses within various business activities, not only internally within the company, along the entire supply chain.

Heretofore, the focus of supply chain efficiency improvement projects has been improving planning and steering concepts and tools between companies. The targeted identification and evaluation of efficiency losses beyond organizational borders were rarely taken into account, although cross-company business processes typically imply significant efficiency losses that must be detected and reduced. However, improving or even optimizing these processes minimizes the non-value-adding time, reduces overstocking, and improves capacity utilization along the entire supply chain. It is important to fully utilize the inherent potential of all relevant resources along supply chains to add value without incurring temporal, material, or organizational waste. Efficient supply chain configuration and operation results in reduced total and per-unit costs of manufactured products, which is the condition for remaining competitive. Moreover, being informed about the current efficiency of the entire supply chain is a condition for successfully increasing supply chain efficiency.

Currently, there are no concepts or tools in either the scientific literature or entrepreneurial practice that enable the objective evaluation and targeted improvement of efficiency along entire supply chains. Basically, logistics performance is influenced by bottlenecks (Bretzke & Barkawi, 2013, p. 10). Of course, a number of efficiency indicators are being discussed in academia, but they are primarily limited to production or to specific logistics processes. None of these indicators enables a differentiated efficiency assessment of entire supply chains. Based on this deficit, the authors address the need for a concept that evaluates and improves supply chain efficiency by developing the Supply Chain Improvement System (SCIS).

It is the aim of this chapter to present the SCIS as a solution for the objective evaluation and effective improvement of either entire supply chains or specific supply chain areas. The research question the authors will answer in this chapter is: Is the concept of the SCIS applicable in entrepreneurial practice for effectively improving the efficiency of selected supply chain areas? To address this, the authors will present the theoretical concept of the SCIS. Beginning with providing background information about process efficiency, current deficits in evaluating and improving efficiency along entire supply chains will be noted. Proceeding with the principles of the SCIS concept, four primary supply chain process categories will be defined, including the relevant efficiency indicators for objectively assessing these processes. Additionally, the authors' approach to evaluating the efficiency of an entire supply chain will be explained in detail. Moreover, the chapter will give deeper insight into the structure of the SCIS on three different levels. Furthermore, the reader will be provided with two interesting case studies, including selected results, to show the applicability of the SCIS in entrepreneurial practice.

BACKGROUND

To be able to discuss tools and techniques for objectively evaluating efficiency along entire supply chains, it is necessary to describe the term efficiency considering logistics processes in general. In essence, process efficiency is the result of an integrated evaluation of a specific process that transfers input into output (Matilainen, Piili, Salminen, Syvänen, & Nyrhilä, 2014, p. 317-320). Typically, process efficiency is determined by cost, quantity, quality, and time. Thus, process efficiency and, specifically, logistics efficiency represent the degree of target achievement of an analyzed process.

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