

Chapter 33

Heterogeneity in Supply Chain Management: An Efficiency Approach

Aikaterini Kokkinou

Hellenic Military Academy, Greece

Maria-Athina Artavani

Hellenic Military Academy, Greece

ABSTRACT

Today's organizations struggle for efficiency and effectiveness. Strategies involving collaboration between actors and integration of activity chains are reliant of factors that firms do not have direct ownership and control over. This has implications for strategizing, setting the goals and measuring performance. Efficiency and effectiveness are often used to describe performance. From a resource dependence perspective efficiency is defined as an internal standard of performance and effectiveness as an external standard of fit to various demands. This chapter attempts through a literature survey to search the main pillars and the determinant factors for efficiency in supply chain management and to present the effects in the competitiveness and the efficient level for an economy.

INTRODUCTION

One of the most important hypotheses in modern economic theory is based on the assumption of optimising behaviour, either from a producer or a consumer approach. As far as producer behaviour is concerned, economic theory assumes that producers optimise both from a technical and economic perspective:

- From a technical perspective, producers optimise by not wasting productive resources.
- From an economic perspective, producers optimise by solving allocation problems involving prices.

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However, not all producers succeed in solving both types of this optimisation problem under all circumstances. In real economic life, it is unlikely that all (or possibly any) producers operate at the full efficiency frontier, with failure to attain the efficiency frontier implying the existence of technical or allocative inefficiency (Reifschneider & Stevenson, 1991).

More specifically, a measure of evaluating the performance at producer level is productive efficiency through production frontier, a concept which compares the transformation process of converting input into output. As Reifschneider and Stevenson (1991) declared, if the occurrence of inefficiency is not totally random, then it should be possible to identify factors that contribute to its existence. In this case, estimating these efficiency measures involves estimating the unknown production frontier.

Borgström (2005) argues that efficiency and effectiveness are constructs that should be seen as independent of each other from a resource dependence perspective and that these constructs are inter-related and complex from an industrial network perspective. Lately development of these constructs describes a unidirectional influence; where effectiveness is dependent on efficiency. The effectiveness and efficiency are outcome of activity systems with two different value creation processes; exchange and use. This chapter investigates how these interrelate to each other. According to Borgström (2005), in supply chains efficiency improvements are e.g. Just-in Time production while effectiveness is achieved through customer orientation and innovation. The conceptualization of efficiency and effectiveness has its roots in system theory. Defining the system as processes of activities implies that the meaning of and the relation between efficiency and effectiveness might change as well. The analysis of efficiency and effectiveness involves the meaning, the use and the relations between efficiency and effectiveness. The framework illuminates that efficiency and effectiveness cannot be seen as independent in a supply chain context with focus on processes. This as the evaluation is neither of a relation nor of an organization but of an organization of relationships. In the analysis of efficiency and effectiveness the main difficulties are time, boundaries, and interdependencies.

Efficiency is an internal standard of performance while effectiveness is an external standard of fit to various groups' demands. Efficiency is a cost-related advantage and effectiveness is an advantage of customer responsiveness within supply chain management research. This means that efficiency improvements are achieved through Just-in-Time production and logistic supplier nets while effectiveness are achieved through customer orientation. The value concepts are related to efficiency and effectiveness. Value is defined as perception of monetary as well as non-monetary outcome where value creation is a set of direct and indirect relationship functions (Borgström, 2005).

Better performance can be achieved by consolidating customer and supplier bases, removing unnecessary steps in the chain, speeding up information and material flows, and creating long-term partnerships with major customers and suppliers to leverage the capabilities of several companies in the chain. Supply Chain Management efficiency can be divided into two main categories. The first category concerns the chain structure. The second group concerns industrial networks and the relationships between organizations in the chain, putting emphasis on the needs of the marketplace and designing the chain to satisfy these needs (Heikkilä, 2002).

This chapter begins with a general overview of the main research on estimating productive efficiency in supply chain management, both in aggregate and disaggregate level, providing the main hypotheses and results of each case. Then, the chapter continues with explaining producer heterogeneity, as well as the main determining factors towards efficiency differentiations.

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