

Criteria for decision-making in Transportation Logistics Function

Multicriteria Decision Network for transport logistics costing

Johanna Trujillo Díaz (*Author*)

Industrial Engineering Program. Faculty of Engineering.
Catholic University of Colombia
Bogotá D.C., Colombia
jtrujillo@ucatolica.edu.co

Mario Martinez Rojas (*Author*)

Systems Engineering Program. Faculty of Engineering.
Catholic University of Colombia
Bogotá D.C., Colombia
mmartinez@ucatolica.edu.co

Carlos Franco Franco (*Author*)

Systems Engineering Program. Faculty of Engineering.
Catholic University of Colombia
Bogotá D.C., Colombia
cafranco@ucatolica.edu.co

Andrés Tarcisio Velásquez Contreras (*Author*)

Industrial Engineering Program. Faculty of Engineering.
Catholic University of Colombia
Bogotá D.C., Colombia
atvelasquez@ucatolica.edu.co

Holman Bolivar (*Author*)

Systems Engineering Program. Faculty of Engineering.
Catholic University of Colombia
Bogotá D.C., Colombia
hdbolivar@ucatolica.edu.co

Jaime Fernando Perez González (*Author*)

Systems Engineering Program. Faculty of Engineering.
Catholic University of Colombia
Bogotá D.C., Colombia
jfperez@ucatolica.edu.co

Abstract— This paper presents the first phase of a methodology for making transportation decisions in the Supply Chain (SC), in the first part of this article are the importance of transactional costs in transportation and their decision levels. Then interrelationships and dependencies of the criteria in Transportation Logistics Function (TLF). Finally presents design of the Multicriteria Decision Network (MCDN), used to support decision-making by managers of goods and transportation companies for modes or carriers selection in the Supply Chain, together with their concepts for to standardize the criteria from the literature review.

Keywords— transportation, criterion, multicriteria decision making, decision levels, network multicriteria decision

I. INTRODUCTION

A. Supply Chain and logistics

There is a difference between the concept of Supply Chain Management (SCM) and the traditional concept of logistics.

The *logistics* are a set of management activities, implementation and control in the Supply Chain (SC) that generate value to a product or service at any echelons of the SC: supplying, production and distribution. In these echelons are expected to be lean logistics, efficient and effective functions: a) planning service technology; communications and infrastructure; b) management of demand and supplying; c) storage and inventory management; d) production of goods and/or services, e) internal and external handling of materials,

products and/or services; f) transportation [1-4], seeking to maximize the total value generated from a product or service [5] (see Figure 1), service level (in time and place) [1, 5-9] and minimizing transaction costs [1, 7-14].

The logistics integrated vertically the SC exists in the distribution channel vertical integration forward the client, find the timing of production and marketing processes; and the supplying channel forwards with suppliers synchronizing procurement processes and production [14].

Supply Chain Management (SCM), for its acronym in English recognizes that each firm or company is a CS, with three echelons and six logistics functions. The SCM is composed for two or more SC as a collaborative network that unite their efforts to coordinate logistics functions in order to deliver products and/or services to the level of market expectations [4], minimize costs [15], maximize the benefit of the formation of the network and the combined activities of logistics functions by strengthening marketing activities, research and development (R & D), financial and customer service [4].

B. Levels of decision Logistics Function of Transportation (TLF) for SC

In the TLF planning levels [16] as are three levels of decision: strategic, tactical and operational [7, 16, 17], which involve physical and human aspects (static and dynamic) [13].