

Proposal of an intermodal transport cost structure of the cocoa productive chain for the logistic corridor between Yacopí and the port of Santa Marta

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Abstract

The concept of intermodal goods transport systems is proposed as a solution to the problems of inefficiency in long-haul routes for unimodal transport systems. Currently, in Colombia, freight transport is mainly concentrated in the highway mode, which has led to a historical dependence on this mode of transport, which also causes an increase in freight rates, which ends up directly affecting the economy of producers and consumers.

This article presents a model for estimating a cost structure for an intermodal transport system for the logistics corridor between the origin (Yacopí - Cundinamarca) and destination (Puerto de Santa Marta - Magdalena) nodes, integrating each of the 3 ways of transportation modes – road, fluvial and ferrous – as input variables, with the aim of being applied to a supply chain of the agri-food sector; specifically in the productive chain for exporting cocoa harvested in the municipality of Yacopí.

The methodological model for the elaboration of the cost structure does not take into account the external costs associated with the activity of freight transport, such as: air pollution, road accidents, traffic congestion, etc. The model is based on the determination of the agri-food chain and the definition of the logistic corridor in order to be characterized through the application of the Hierarchical Analysis Process (AHP). Subsequently, the model is fed with the data collected in this specific field and by consulting the databases of public and private entities that regulate and record the way variables of the model fluctuate, such as: fuel, tolls, cost of tires and auto parts, drivers' salary, maintenance costs, etc. Once the information has been consolidated, the costs associated with the intermodal transport of cargo by distance

traveled in each of the transport modes implemented will be determined.

Keywords

(01) Intermodal Transport, (02) cost structure, (03) Freight transport, (04) Intermodal transport corridor.

Biographies:

Jefferson Aldamer Rubiano Forero, is an industrial engineer from the Military University of the New Granada and a physicist from the National University of Colombia; he is currently a candidate to a masters degree in physics from this same university. He is also the teacher in the University of Cundinamarca and is a member of both the Investigative group of Industrial and Environmental Processes and the Econophysics and Sociophysics investigative group in the institutions previously mentioned. He has experience in the design and implementation of betterment strategies, and tracking evaluation processes, as well as creating management reports, designing and analyzing management indicators, handling statistic and mathematical programs for organizational management, training focal population, guiding academic processes and generating and implementing strategies for significant learning based on evidence and support of communicative processes in an academic community by using information technologies.

Ceudiel Alexis Valero Portilla, Industrial engineer with a bachelor degree from the National University of Colombia. Assitant and research student in topics related to logistics and intermodal transport systems, for the Master Program in Industrial Engineering at the same University. With extensive experience in the textile sector and particularly interested in the supply chain managment area.

Sebastien Erik Benoitdufeu, Passionated about the transportation field, he chose to conciliate his passion with his studies. That is why he decided to study engineering, more particularly industrial and mechanical one with the aim of working in the aeronautical shpere. He also took classes in order to pass his pilote license and be able to fly on small planes. This interest in the transportation field is also reflected in his passion for travel: discover new cultures, meet new people, learn about them. Open-minded and curious, these are important qualities for an engineer. That is precisely why he went abroad for his last year before graduating. Colombia is different in all parts of Europe where he studied the rest of his time. After graduating from high school with honors, he entered a intensive preparatory class in order to integrate one of the best engineering public schools in France, Arts et Metiers Paristech. During his two years of engineering school, he mostly studied mechanics, electricity, logistics and management. He chose for his last year before graduating to study at Universidad Nacional de Colombia (UNAL) for a one year research specialization about industrial engineering and more specifically in the field of logistics.