

Chapter 11

The Logistic Model Based on Positions (LoMoBaP [MoLoBaC]) and Industry 4.0

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ABSTRACT

This chapter relates business logistics, Industry 4.0 and multicriteria decision making. It is analyzed how the Logistic Model Based on Positions, it is adapted to the approach of Industry 4.0. Business logistics is related practically with every area of an organization, which making it appropriate to study organizations. But at the same time these multiple relationships make its study complex. To minimize the complexity of business logistics learning, four models were created to facilitate their teaching. One of them, MoLoBaC, which studies logistics based on the functions performed by those who have positions associated with it, has repercussions in all areas of the organization. This impact makes the MoLoBaC an ideal candidate to study the new business approaches. At the same time it generates interest to know as the MoLoBaC, can adapt to the approach of Industry 4.0. From everything previous the general objective of this work arises: Perform a qualitative-quantitative analysis of the adaptation of the Logistic Model Based on Positions to the new business approach, Industry 4.0.

INTRODUCTION

To understand the concept of Industry 4.0, it must be taken into account that it is considered the fourth revolution of the industrial age. The first three industrial revolutions were: the introduction of water and steam as mechanical energy at the end of the XVIII century (Brettel et al., 2014); the industrial use of electricity, which allowed and facilitated mass production as early as the end of the XIX century (Rüßmann et al., 2015; Schmidt et al., 2015) and the introduction of automation of the manufacturing processes through the programmable logic controllers (PLC) almost at the end of century XX (Borisov et al., 2016; Brettel et al., 2014; Flores et al., 2015; Hernández, Hernández & García, 2017; Rüßmann et al., 2015; Schmidt et al., 2015). And the fourth revolution (Industry 4.0) arises when, through technology, the real world is integrated with the era of computer development (Zhou, Liu & Zhou, 2015).

The concept of Industry 4.0 is based and involves many fields of knowledge and industrial activity, one of them being the logistics (Posada et al., 2015; Seitz & Nyhuis, 2015; Valdez et al., 2015). And, in particular, it is often referred as smart logistics, either in the context of Industry 4.0 (Menicocci, 2015; Stock et al., 2015; Stock & Seliger, 2016) or in related contexts (Kodym & Unucka, 2016; Shafiq et al., 2015), and even usually uses the term Logistics 4.0 (Domingo, 2016). In any case it is considered the logistics as a differentiating element (Seitz & Nyhuis, 2015).

With regard to business logistics, as discussed in different works (Barreto et al., 2016; De Burgos et al., 2016; García et al., 2017; Hernández, Hernández & García, 2017; Schwarz et al., 2016; Tarazón et al., 2016), it is possible to see that it is related to practically all the areas of an organization, this is an advantage, since the same can study the organization as a whole. But at the same time is a disadvantage, because it makes its complex study.

To facilitate the teaching of logistics, in academia, four qualitative-quantitative models were created: Logistic model Supply, Production, Distribution and Inverse (LSPDI, in Spanish el modelo Logística de Abastecimiento, Producción, Distribución e Inversa [LAPDI]) which focuses on logistical flows to analyze business logistics; the Logistic Model Based on Positions (LoMoBaP, in Spanish Modelo Logístico Basado en Cargos [MoLoBaC]), which takes into account all the functions performed by those who hold positions related to business logistics; the Logistic Model Based on Indicators for Positions (LoMoBaIPo, in Spanish Modelo Logístico Basado en Indicadores de Cargos [MoLoBaICa]), which in a way overlaps the MoLoBaC and analyzes the logistics through management indicators and the Logistic, Strategic, Tactical, Operational with Inverse Logistics Model (STOILMo, in Spanish Modelo Logístico, Estratégico, Táctico, Operativo con logística Inversa [MoLETOI]), which is based on the three components of the administrative pyramid the: Strategic, Tactical and Operational and including reverse logistics, analyzes the business logistics. This work will focus on the second of these models the MoLoBaC.

The relevance that Industry 4.0 takes every day and the presence of these models to facilitate the understanding of logistics motivates this research. It is desired to study the application possibilities that one of these models, the MoLoBaC, could continue to have in the field of Industry 4.0 and it is important that this analysis is done both qualitatively and quantitatively.

To perform this quantitative analysis in addition to Industry 4.0 and the MoLoBaC, another aspect that is relevant for this work are the multicriteria models. These multicriteria models should be used when there are a set of alternatives to evaluate, which must meet several criteria simultaneously, regardless of whether these criteria can be counterpoised.

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