Chapter 23

Inventories Control, State Regulations, and the Amplitude Model (TAM)

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ABSTRACT

The contribution of this chapter is to relate the control of inventories and the regulations that on it the state can exercise, with the decision making under uncertainty, represented by The Amplitude Model (TAM) and making use of the area Inventory of the Logistic Model Based on Positions (MoLoBaC). Inventory control is one of the fundamental tasks of business logistics and the company as a whole. But there are situations where this inventory control is affected by state regulations. It wants to analyze this delicate situation from the perspective of the models of decision making under uncertainty, in particular TAM. From the all above the general objective of this paper emerges: Make use of the Inventories area, of the Logistics Model Based on Positions and with The Amplitude Model, to analyze the possible actions to take, to confront the consequences of the restrictions imposed by the state, which affect the inventory control.

INTRODUCTION

The presence and management of inventories in the industrial field can be seen from different perspectives, starting from the information that can be shared along the supply chain (Du et al., 2012) to the environmental effect and costs of carbon emissions (Hovelaque & Bironneau, 2015) and even incorporating, in addition to environmental aspects, the quality (Kazemi et al., 2016) and passing by the bullwhip effect.

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(Nagashima et al., 2015) and the analysis of multiple levels in the supply chain (Salas et al., 2016). Or by the effect of the four seasons (Hudnurkar, Jakhar & Rathod, 2014) and the deterioration of the products (Khedlekar, Shukla & Namdeo, 2016; Sana, Panda & Modak, 2015), by the impact of the restrictions of the carbon footprint in the inventory management (Tao, Fan & Lai, 2016), by the time of lead time and a better customer service (Glock, 2012; Sarkar & Moon, 2014) and even considering aspects, such as the delay in payments (Aljazzar, Jaber & Goyal, 2016; Banu & Mondal, 2016).

This great relevance of the inventories makes that there are many works that study the importance of the inventory control (Cárdenas-Barrón, Cheng & Treviño-Garza, 2014; García et al., 2017; Schwarz et al., 2016). These first authors focus their study on the model of Economic Order Quantity (EOQ) of which model has derived another great amount of works (De & Mahata, 2016; De & Sana, 2015; Kazemi, Olugu et al., 2016; Mishra, 2016; Shekarian et al., 2016). And even some of them on approaches to those previously mentioned, such as carbon emissions (Qin, Bai & Xia, 2015; Yang et al., 2016).

For their part García et al. (2017) and Schwarz et al. (2016) have focused, as well as Tao, Fan & Lai (2016) in aspects that have to do with restrictions on the control of inventories, but in their case when restrictions are imposed by the state.

The subject of the intervention of the state is of old data, as they comment García et al. (2017) and although it is a central theme in economics studies (Aguilera et al., 2011; Clift, 2012; Voss & Williams, 2012) and the marketing studies (Timm, 2014) it has also been studied from other points of view, such as sociology (Liow, 2012) and the socio-economic vision (Fine, 2016).

But of everything that can be commented on the intervention of the state in the economy, for this work, the interest is centered in the interventions of the state that can affect the control of inventories. In particular it will start of the work of García et al. (2017) and Schwarz et al. (2016), in which are visualized the negative consequences, which on the control of inventories, can cause the intervention of the state.

Taking action to minimize this negative impact is the responsibility of each organization. And there appears the business logistics, which by its relation with practically all the areas of an organization, offers a way to prosecute these actions to take. From the business logistics can be taken some of the models created to facilitate their teaching, in particular the Logistics Model Based on Positions (LoMoBaP [MoLoBaC]).

In the work of García et al. (2017), which in turn takes elements provided by Schwarz et al. (2016), some alternatives of decision are analyzed to confront the intervention of the state and in both works, positions of the MoLoBaC were used, in particular Schwarz et al. (2016) make use of the Inventories models manager (IMM) and García et al. (2017) use the Inventory General manager or simply Inventory manager (IM) and in this last work, the analysis carried out through a multicriteria model, a multilayer Matrix Of Weighing with Multiplicative factors (MOWwMf [MDPcFm]).

But in general, when there appear these problems caused by regulations of the state, is under uncertain scenarios, for which the decision making is usually under risk and even worse, under uncertainty. A model that can help solve problems of decision making under uncertainty is The Amplitude Model (TAM [EMA]).

Therefore, with respect to this work, it will also use the MoLoBaC, but not through independent positions, but that will be use one of their areas, Inventories. And on the other hand the alternatives will be analyzed from the point of view of the problems of decision making under uncertainty. Specifically be used TAM.

From the above the general objective of this paper emerges: Make use of the Inventories area, of the Logistics Model Based on Positions and with The Amplitude Model, to analyze the possible actions to