Forecasting Scrap Tires Returns in Closed-loop Supply Chains in Brazil

Marina Meireles Pereira a, Ricardo Luiz Machado a *, Silvio Roberto Ignacio Pires b, Maria José Pereira Dantas a, Patricia Regina Zaluski a, Enzo Morosini Frazzon c

a Industrial and Systems Engineering Postgraduate Program – MEPROS, Pontifical Catholic University of Goiás, Avenida Universitaria, 1069, Setor Universitario, CP 86, 74605-010, Goiânia – GO, Brazil
b Management Postgraduate Program, Methodist University of Piracicaba, Rodovia do Açúcar, km 156, 7000, 13423-170, Piracicaba – SP, Brazil
c Industrial Engineering Postgraduate Program, Federal University of Santa Catarina, CTC, CP 476, Campus Universitário, Trindade, 88040-900, Florianópolis – SC, Brazil

*Corresponding author: Ricardo Luiz Machado
E-mail: drrmachado@gmail.com

1. Introduction
The closed-loop supply chain (CLSC) consists in the activity of “design, control, and operation of a system to maximize value creation over the entire life cycle of a product with the dynamic recovery of value from different types and volumes of returns over time” (Guide and Van Wassenhove, 2009). The interest of companies for CLSC occurs because of economic factors, reduction of natural resources and stricter environmental laws (Pati et al., 2010). However, the implementation of the activities that are part of the CLSC presents difficulties in dealing with uncertain factors such as quantity, quality, and time. Temur et al. (2014) state that the returns do not have a well-defined structure, because they depend on dynamic factors such as the product characteristics and life cycle. The uncertainty related to products return quantity leads to consequences in the CLSC as the bullwhip effect (Pati et al., 2010 and Zhou et al., 2017), and has a direct impact on the transport planning, allocation of resources for the logistical operation (Hanafi et al., 2007), inventory management and planning of reprocessing processes (Krapp et al., 2013).

Shen and Chan (2017) argues that product return is related to reverse supply chain and can be well-observed in praxis, but is still under-explored. Moreover, in the academic field Wei et al. (2015) affirm that the studies of return forecast are relatively limited.

Potdar and Rogers (2012) sustain that in order to develop studies concerning return forecast, an effective method of demand forecasting is required, so that decisions at all levels in the organization are improved. They also state that to improve the accuracy of forecasting in the reverse logistic (RL) is paramount to estimate the potential return flow. For this purpose, several demand-forecasting methods were employed to predict the product return in the reverse chains (Govindan et al., 2015).

In accordance with Outmal et al. (2016) the CLSC makes it mandatory for manufacturers to combine the forward and reverse flows within the same supply chain. Due to this forward-reverse relation, Krapp et al. (2013) sustain that to analyze the flow of returned products is
دریافت فوری متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات