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## A comprehensive framework for measuring performance in a third-party logistics provider

Maria Leonor Domingues\*, Vasco Reis, Rosário Macário

*Instituto Superior Técnico, Universidade de Lisboa, Av. Rovisco Pais, 1 - 1049-001 Lisboa, Portugal*

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### Abstract

Today, Third-Party Logistics Providers (3PL) face a great pressure in order to meet its clients' needs: customers demand a high level of time and place value for their deliveries, at lower prices, making the last mile activity not only a challenge whilst meeting the clients' requirements but likewise in managing the profitability and the financial balance of the operation. In order to meet the logistics' operation efficiency, several 3PL monitor their activity assisted by a variety of ex-post systems of performance indicators that assess the quality and efficiency of the logistic process. Whereas most of the times 3PL do not fully exploit the potentiality of those performance systems.

The objective of this paper is to provide comprehensive and innovative performance measurement framework for a Third-Party Logistics Provider, transferrable for other stakeholders. The framework is supported in a thorough revision of the existing literature regarding performance indicators systems, with particularly significance in the field of logistics and freight transport.

The rich variety of logistics' performance indicators arrays frequently focus on a specific domain or follow a typical framework which includes metrics for cost and asset management, customer service, productivity and quality. In order to meet the specifics of a 3PL, we believe that a more detailed framework would be beneficial.

The framework we propose is organized in three levels: the activities dimension (e.g. transport, warehousing, and customer service), the decision level dimension (operational, tactical and strategic) and the different actors dimension (e.g. carriers, 3PL and consolidation centers). A case study of *Urbanos*, a Portuguese 3PL firm, was used to validate the proposed framework.

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\* Corresponding author. Tel.: +351917451376;  
E-mail address: [marialeonordomingues@ist.utl.pt](mailto:marialeonordomingues@ist.utl.pt)

## 1. Introduction

Logistics is one of the dynamic activities that enables the connection between production and consumption (Bartolacci, et al. 2012). According to the Council of Supply Chain Management Professionals, logistics consists of a set of processes encompassing planning, implementing and controlling the flow of goods, services and related information (Vitasek, 2013). Logistics is a complex business and that can be measured from different perspectives. One of the objectives of logistics is to guarantee the efficiency and the efficacy of all the procedures from the point of origin to the point of destination whilst meeting the customers' required quality, including information reliability and sensibility to customers' needs.

Logistics is not only relevant for the production sector but it is also crucial for enterprises from all segments, e.g. banks, retailers, government and institutions. Logistics plays a key role in the competitiveness of organizations whilst creating value by providing time and place utility (Christopher, 2005; Lambert et al., 2006).

Waters (2003) refers that "without logistics, no materials move, no operations can be done, no products are delivered, and no customers are served". To position the right products close to the right consumer, several activities have to be performed, including transport, customer service, information technology and communications, finance, warehousing and outsourcing (Frazelle, 2002). In order to perform these activities the participation of several actors is required: freight forwarders, carriers, third-party logistics providers (3PL), warehouses, shipping companies, manufacturers and retailers, to name a few. In addition to the ones mentioned there are two vital participants in the complex logistics system: the first one is responsible for the demand - the consumer – the second one is in charge of regulating the activities – the authorities.

Logistics has an increasingly important role in the economy of the global marketplace representing approximately 8,5 percent of the gross domestic product (GDP) in the USA and accounting, on average, for 10 percent of the GDP of European countries, (Arvis et al. (The World Bank), 2012; Council of Supply Chain Management Professionals, 2012). Logistics is estimated as one the major expenditures for businesses, though varying widely across sectors (Waters, 2003). Consequently, in today's competitive environment there is a pressing need to control logistics costs and performance measurement has proven to be a successful tool in achieving business objectives. Performance Measurement Systems (PMSs) are frameworks that integrate performance information - Performance Indicators\* (PIs) and Key Performance Indicators (KPIs) - in a dynamic and accessible way in order to achieve consistent and complete performance measurements (Lohman et al., 2004). PMSs provide companies with the necessary tools to support the planning and monitoring of a process while revealing historical data that offers important feedback (Ramaa et al., 2009). PMSs contribute to effective control of business progress enhancing the overall efficiency thus profitability (Rushton et al., 2010). Firms have been adopting a wide range of PMSs for the past decades, the question that is raised is whether these systems meet the competitive environment needs or the PMS are out-of-date. In fact, Minahan and Vigoroso (2002) found in their study that nearly 60 per cent of the investigated enterprises were not satisfied with their ability to measure and manage performance.

As the global market becomes more sophisticated, the difference between the operations a company wants to achieve and what a company manages to perform in-house is increasing. The tendency among firms from all sectors is to outsource their logistics activities that are more costly and time consuming to external entities, namely in logistics, third-party logistics providers (3PLs) (Lambert et al., 2006). 3PL firms provide a variety of logistics-related services, including, for instance, transportation, warehousing, distribution and freight consolidation. Outsourcing these activities enables companies to reduce costs and focus on their core activities where they build a competitive advantage over adversaries (Christopher, 2005). Nevertheless, choosing the right partnership is often a complex decision.

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\* Performance indicators (PIs) are quantifiable metrics used to evaluate the performance of actions, whereas Key performance indicators (KPIs) are the PI that refer to the most critical actions, on which depend the success of an organisation (Lindholm, 2010; Posset et al., 2010)

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