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Procedia Manufacturing 51 (2020) 1665–1672

Procedia MANUFACTURING

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30th International Conference on Flexible Automation and Intelligent Manufacturing (FAIM2021)
15-18 June 2021, Athens, Greece.

New conceptual model of Reverse Logistics of a worldwide Fashion Company

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Abstract

This paper focuses on the logistics activity of the Outlet Retail industry of accessories and clothing items produced by a Portuguese fashion company, operated by an also Portuguese Third-Party Logistics providers (3PL). The main goal of this study is to address and analyze the current business and process model used by the Portuguese 3PL, to compare it with other existing models within the state-of-art, and to design a new conceptual model for 3PL's reverse logistics activities in the Clothing and Fashion Industry. The second main goal is to identify improvement opportunities, while observing and mapping logistic activities, in order to increase productivity, reduce costs, and improve the quality of the service. The analysis was supported by Lean and Supply Chain methodologies and by appropriate tools like the Value Stream Mapping (VSM). VSM contributed to map the business processes in a structured and systematic way and provided a wide perception of the value chain to identify the waste that could be reduced. The data used to feed the VSM was collected by cycle time measurements and also data analytics. After the analysis, a new Value Stream Proposal was presented for that business model, as well as the gains achieved by the execution of technologic and lean-based improvement actions. Finally, this paper presents a Conceptual Business Model for 3PL's Reverse Logistics in the Clothing and Fashion Industry.

Keywords: Reverse Logistics; 3PL; Retail; Outlet; Conceptual Model

1. Introduction

Since the industrial revolution in the 19th century, organizations have benefited from the evolution of logistics and supply chain. New concepts, methodologies, and technology have emerged and created opportunities for organizational transformation and progress. Over the past decade, due to new political, climatic, and economical concerns, a recent domain of logistics and supply chain management has been introduced and discussed within organizations –reverse logistics.

This paper sought to study the fashion business environment and documented as a business case study to provide a new support model and contribute for furthering scientific literature on reverse logistics. This paper describes a reverse logistics model used by a Portuguese fashion company outlet business operated by an also Portuguese 3rd party logistics (3PL) provider, and a project conducted by a continuous improvement team seeking to improve the quality and efficiency of the service. This paper is organized in five sections. This first section, the introduction, is where the problem is contextualized and the goals and methodology are explained. Section 2 presents a literature review which supports this project. Section 3 presents the conducted case study. In the section 4, the new conceptual model is explained. Finally, section 5 presents the conclusions.

10.1016/j.promfg.2020.10.232

1.1. Project goals

Adding value, reducing costs, increasing sales, etc., are certainly concepts that are immediately associated with improvement projects. Organizations constantly generate and follow trends, and those that become more creative, innovative, efficient and, of course, successful, become a point of reference for the rest. This project follows the same logic and aims to enhance the quality and efficiency of the Reverse Logistics (RL) activity by using Lean methodologies and to compare the logistic model currently used by the 3PL with existing models mentioned by literature and industry's best practices, to:

- Find opportunities for improvement;
- Add value to the process;
- Reduce operating costs;
- Outline a conceptual model for future activities.

1.2. Methodology

The selection of the methodology required was established comparing the state-of-art best practices and the project requirements. The methodologies used were:

- Process observation;
- Process modeling through swim lanes and flowcharts;
- Time measurement;
- Mapping of the value chain by using the VSM tool.

1.3. Contextualization

1.3.1. The companies

The case study documented in this paper describes an outsourced RL activity of a worldwide fashion retail company (Company A), operated by a 3PL (Company B). The project took place at the facilities of Company B, which is responsible for the in-house reverse logistic processing and handling (described in subsection 1.3.2) of Company A's product. Both companies play an important role in the Portuguese and international market.

1.3.2. Wide panorama of the RL activity

For a better understanding of this case study, this subsection introduces the overall scenario on RL activity. The focal point of RL activity is to recover the stock surplus that were not sold by the end of a fashion season, and to sell those to outlet and online stores – Fig. 2. Fashion collections can be divided into two seasons: Fall/Winter (FW) and Spring/Summer (SS). For instance, when FW collections are being sold at season, the SS collections are being designed and produced, and vice-versa (Fig. 1).

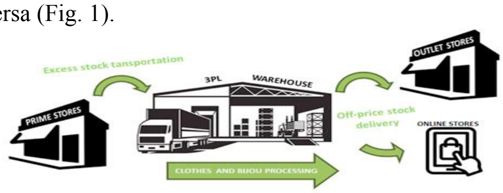


Fig. 2 - Outsourcing of the RL activity

Fig. 1 - Core and RL logistics seasons.

Also, at the end of a given season, the merchandise surplus is transported to Company B, which will be responsible for processing the entire product until the same season comes on the next year. The target is to sell the same collection on different channels: prime stores (collection of current year) and outlet and online stores (collection of previous year).

2. Literature review

2.1. A brief review on Logistics Management

Since the 19th century that business organizations came to recognize the crucial impact of logistics management (LM) in achieving a competitive advantage [1,2]. As the industrial revolution sparked the growth of market competitiveness, enterprises faced a new challenge: how to improve customer responsiveness, while keeping the business profitable? The answer would lay with an agile and well-synchronized structure capable of providing the means by which customer service requirements are met at the lowest cost [1,2]. Therefore, [1,2] defines LM essentially as a planning orientation and framework that seeks to create a single plan for the product and information flow through a business. Mangan et al. [3] refers that "Logistics involves delivering the right product, in the right way, in the right quantity, with the right quality, in the right place, at the right time, to the right customer at the right price".

2.2. Supply Chain Management

Logistics management was primarily concerned with optimization flows within the organization whilst supply chain management (SCM) recognized that internal integration by itself is not sufficient [2]. With the increasing demand for a wider variety of products and a consequent complexity of logistics systems, companies are challenged to respond effectively to their clients, while maintaining an efficient high-level performance [4]. Thus, the scope of management has to be expanded to a wider pipeline, between suppliers and customers – the SCM. Christopher [2] defines SCM as "the management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole". Dittmann [5] describes the SCM as a broad and horizontal end-to-end process, guiding the seamless flow of the product, information, and cash across the extended enterprise. Dittmann [5] adds that "although product flows forward, from suppliers through the firm to the customers, the strategic and information requirements should move backwards, starting with the customer's requirements (see Fig. 3).

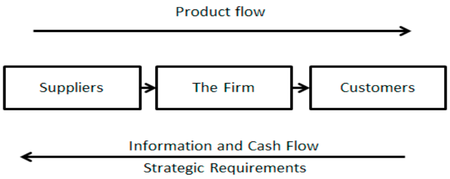


Fig. 3 - Product, information, and Cash Flow in a Supply Chain. Adapted from: [4].

Nowadays, "customers don't buy products, but benefits" [2] meaning that buyer's perceived value is mostly connected to the user experience (service, image, etc.) rather than to product specifications. It no longer matters what you want to sell, but what the customer really want to buy. This perspective influenced companies to adopt and design customer-oriented business models. Michael Porter [6] introduced the Porter's Value Chain, an internal strategy which helps to identify the primary and secondary activities that provide value in the eyes of the costumer [2].

In the early 1990's, the automobile industry presented a successful case that compiled customer-oriented process design and continuous improvement - the Toyota Production System (TPS) - designed and implemented by Taiichi Ohno and Eiji Toyoda [7], in the 1970's. Womack and Jones in 1996, asserted that the TPS was more than a system - it is also a work philosophy, a different way of thinking – the Lean Thinking (LT). The LT refers to reduce *Muda*, a Japanese word that translates futility, uselessness, and waste. It is an efficient work methodology that focuses on the minimum use of resources and elimination of waste (7 Muda's) [8]. According to Womack and Jones [9], LT is based in 5 principles: (1) Identify value – what is the customer perceived value; (2) Map the Value Stream (VSM – see Fig. 4) – it helps to identify and eliminate waste; (3) Create a continuous flow – non-stop production and low-stock levels; (4) *Pull* production – only produce what the customer desires; (5) Seek of perfection – the continuous improvement.

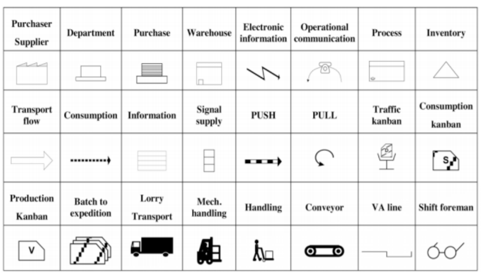


Fig. 4 – Icons used in a Value Stream Mapping [VSM].

2.3. Reverse Logistics Management

Value creation has been mostly associated to effective response to customer needs – how well are you able to deliver your product or service and profit from it.

LM and SCM brought a wide panorama that supported companies to make customer efficient responsiveness possible. But does the value creation end when the product/service is finally delivered to the customer? Interestingly enough, the answer has been given to us more than 200 years ago by the *"Father of Modern Chemistry"*, Antoine de Lavoisier, when he mentioned: "in nature, nothing is lost, nothing is created, everything is transformed". If there was a scenario where waste did not exist at the end of supply chain, this could be true but, usually, there is plenty of waste – end-life product, defects, stock excesses, residuals, etc. and this requires processing (handling, transformation, etc.- which means a cost. Thus, value creation remains, in fact, between Forward and Reverse Logistics (RL).

RL is a concept that has increasingly gained importance in both business and research over the past 20 years. The introduction of environmental laws, increasing environmental awareness by customers, and growing competitive pressure has led to the development of multiple models and solutions for RL activities [10]. Rogers and Tibben-Lembke [11], define RL as the process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information, from the point of comsuption to the point of origin, for the purpose of recapturing value or as the set of logistic activities of collection, disassembly and proper disposal. From an environmental point of view, RL is defined as the processing of used products and parts making the use of the product more valuable and sustainable [12]. Weeks [13] divides RL into two systems: Open-Loop and Closed-Loop. That author states that, in an open system, returned materials are collected by the originator, then resold to another manufacturer or sent as scrap to a recycler. On the other hand, a closed system is one in which materials are returned and reused by the same originator, following a Cradle-to-Cradle philosophy (based on the idea that product should be managed in circular logic of creation and reutilization).

2.3.1. Reverse logistics impact

According to the literature research, RL is far from reaching a mature status within the companies, as today it is difficult to evaluate the real impact of RL management [14]. On a research conducted by [11] it has been estimated that reverse logistics costs represented approximately 4% of their total logistics costs. According to Lambert [14] in 2004, the US reached 636$ billion in total costs, meaning that around 25$ billion were spent on RL transportation costs. According to Greve and Davis [15], the study conducted by the Aberdeen Group in 2010 concluded that factories will spend, on average, 9% to 15% of their total revenues on returns. Also it has been estimated that improvements on RL management could increase enterprises revenues in 5% of the total sales [15]. With market growth and the expanding of new channels, like online market, it is expected that product return rates will also increase.

The fashion and apparel industry also provide a fertile field of opportunities as it represents a major sector in developed and developing countries, contributing to economic growth and social employment. As Fast Fashion (FF) grows as an important trend and practice in this field, modern apparel enterprises are facing high return rates. The fast fashion retailing strategy enhances consumers' impulse purchases - an important factor to the high rate of returns [16]. Also [17] mention that in the apparel industry, product return rates are reported to range from 10% to 20% for casual apparel and as 35-40% for high fashion.

2.3.2. Models applied to the Reverse Logistics

According to the literature review, there are multiple studies concerning RL analytical models that aim to reduce costs. For example [18] apply Article Immune System (AIS) and Particle Swarm Optimization (PSO) algorithms to maximize the total expected profit and also obtain an efficient route for the vehicle, where they conclude the model is more effective with AIS algorithm. Barker and Zabinsky [19] demonstrate a multicriteria decision making model for reverse logistics using analytical hierarchy process (AHP) using three case studies of real-world applications. Coelho et al. [20] propose a model for a Capacited Plant Location in RL problem solved using a mixid-integer linear programming model (MILP) with the objective of identifying the optimal sites to install reprocessing facilities to minimize the variable costs (transportation and management) and fixed costs (instalation of facilities) [20]. MILP model is used in another study on the industry of construction, renovation, and demolition (CRD) targeting the minimisation of the total cost on wood recycling process [21]. The state of art also provides further papers that seek to find key processes of the RL. Agrawal et al. [22] defines the RL key processes as: 1. Product acquisition/gate keeping; 2. Collection; 3. Inspection and sorting and 4. Disposition. Lambert et al. [14], based on the same key processes, delivers a RL conceptual framework as basis for implementing or reviewing an RL system. The conceptual framework proposed by [14] gathers seven elements: 1. Coordinating system; 2. Gatekeeping; 3. Collection; 4. Sorting; 5. Processing or treatment; 6. Information system; 7. Disposal system (see **Erro! A origem da referência não foi encontrada.**).

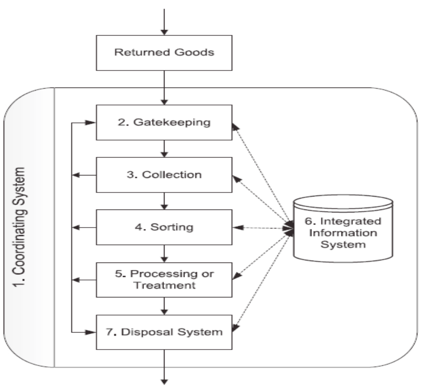


Fig. 5 - RL systems elements. Source: [14].

Some studies were also conducted to understand customer return behaviors. Chen and Bell [23] investigate a decentralized supply chain with costumer returns and proposed an easy-to-implement agreement that includes two buypack prices guiding to complementary profit-sharing. In 2009, relationships between apparel return behavior and fashion innovativeness, buying and consideration of return policies of US consumers were investigated by [24]. Choi et al. [17] conducted a mean-variance (MV) analysis of a fast-fashion supply chain (FFSC) with returns policy, proposing that simple return's policy can be applied to coordinate the FFSC. From all the models studied in the literature, it is in the interest of this project's mission (introduced in the first section) only the structural and conceptual models analyzed during the author review, specially the model presented in [14]. In the fourth section is given to the reader a detailed explanation of the selection of the mentioned models.

3. Case Study

3.1. Recap of the first section

In the first section, it was introduced a study conducted in a 3PL (Company B), that provides an RL outsourcing activity to a fashion retail company (Company A) which wishes to recover lost sales in the stock surplus by reselling it in outlets and online channels as off-price. The goal of this paper is to make an internal and processual analysis, to seek improvement opportunities to reduce costs, and increase the service quality.

3.2. Introducing the RL activity

At the end of a collection season, the apparel stock surpluses are transported from the stores to Company B facilities, where the RL activity will initiate. The types of product processed in the RL activity are divided into two groups: clothing (large items) and bijou (small items, such as necklaces, rings, etc.). The treatment of the apparel at the Company B is prepared in a mezzanine structure (two floors). The heavy and large items are processed in the ground floor, and stored in conventional pallet racking, as the light and small items are processed at the first floor, and stored in M3 steel shelving. The inventory management is supported by radio frequency equipment and the 3PL standard warehouse management system (WMS). Some activities were previously managed with a C-Sharp programmed application. As for the information flow within Company A and B it was managed by a logistics web platform from Company A, that compiles information about stores stock and needs.

3.3. Value Stream Mapping – the state before

As it has been described in subsection 1.1, the goal of this paper is to enhance the quality and efficiency of the RL activity by using Lean methodologies. Thus, this analysis was conducted according to Womack and Jones [7] five principles for value identification and continuous improvement. To initiate the project, a VSM has been designed based on the following stages:

1- Process observation – each process was observed, in order to identify cyclical activities;

2- Unit of measurement selection – definition of a unit to make the comparison between processes measurable;
3- Cycle times measurement – processes timing using a chronometer.

It was also defined that: a) only critical activities of each process need to be classified; b) all resources worked equally; c) the data recorded would not exclude waste activities; d) due to the scarcity of information, an estimate would be made on the number of pieces of each sample in some processes; e) given the long duration of some processes, a secondary trigger would be established, and ending activities.

3.3.1. Process observation and VSM design

In order to identify and categorize the value stream, process observations have been conducted at Company B's facilities, where nine main processes were identified and quantified: 1) Unloading; 2) Inventory; 3) Sorting; 4) Counting; 5) Storage; 6) Picking; 7) Packing; 8) Strapping and Identification; 9) Loading – Fig. 6. The first five processes belong to the inbound activity that works as a push system, where all the items sent from the primary stores are *pushed* into the inventory. The following four processes belong to the outbound activity of the product, defined as a *pull* system, since only the demand from outlet and online stores is processed. These processes were selected by using the following criteria: 1) all activities have a cyclic flow; 2) all activities are fed with stock and in the end generate stock.

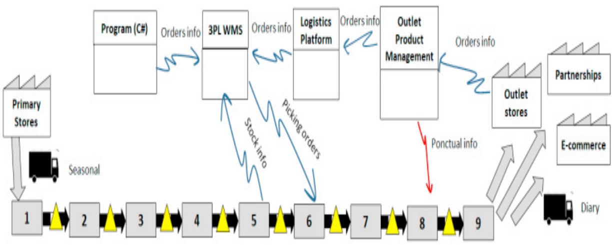


Fig. 6 - VSM - the state before.

Due to the complexity and long duration of some processes, the need to categorize the relevant activities of each process arose, in order to ease the cycle time measurement. During the work, the following categories have been listed:

a) Primary activities – activities that add value to the process;
b) Secondary or support activities – non value added activities, that are triggered by the need of primary activities, becoming essential.
c) Trigger activities – when the process begins (they could be primary or support activities);
d) Ending activities – when the process ends (they could be primary or support activities.

Table 1 describes the list of trigger and end activities that form the nine main processes.

Table 1 - Main processes with trigger and ending activities.

Main Processes	Trigger of the activity (*t*)	End of the activity (*e*)
1. Unloading	Unload	Mass storage
2. Inventory	Handling	Rack and shelving storage
3. Sorting	Handling	Mass storage
4. Counting	Handling	Mass storage
5. Storage	Handling	Rack and shelving storage
6. Picking	Picking order	Mass storage
7. Packing	Handling	Mass storage
8. Strapping boxes	Handling	Mass storage
9. Loading	Loading	Document signing

3.3.2. Unit of measurement selection

After the determination of the cycles to be timed in each process, it is important to identify the units of measurement (UM). The selection of UM was carried out based on the following criteria:

a) Need for a continuous quantitative variable (time measurement);
b) Need for a discrete quantitative variable (counting of items);
c) Be a standard unit for all processes;

Fulfilling the requirements mentioned above, the UM's selected to perform the calculation were:

d) Continuous quantitative variable: sample duration (seconds) (SD).
e) Discrete quantitative variables: number of stock keeping units (NSKU) and number of human resources (NHR) that perform the task.

For the calculation of the UM, the following equation (1) was used:

$$UM = \frac{\text{SD}}{\text{NSku}} \times NHR \tag{1}$$

3.3.3. Cycle times measurement

Based on the UM selected and the process observation, a total of 193 process samples were collected and registered. Due to the differences between the handling between the parts sizes, some processes were divided into two groups: large items (*Li*) and small items (*Si*). In Table 1 it is possible to observe the detail of the process samples.

Table 2 - List of the RL process samples.

Main Processes	Qt. Large items	Qt. Small items
1. Unloading	5	-
2. Inventory	37	34
3. Sorting	14	13
4. Counting	11	3
5. Storage	17	5
6. Picking	10	22
7. Packing	10	7
8. Strapping boxes	3	-
9. Loading	2	-

For the general analysis of the activity were used: (a) Arithmetic mean; (b) Standard deviation; (c) Confidence Limits. The calculation of the arithmetic mean of the samples for each process $\overline{N}$, was performed using the equation (2):

$$\overline{N} = \frac{\sum SD_i}{\sum NSku_i} \tag{2}$$

The variables in the equation represent the following:

- SD_i:value at position *i* in the set of the temporal samples;
- $NSKU_i$: value at position *i* in the set of the quantity samples.

The standard deviation, α , was calculated from the following equation (3), where *n* stands for the number of samples:

$$\alpha = \sqrt{\frac{\sum_{i=1}^{n}(SD_i - \overline{N})^2}{n}} \tag{3}$$

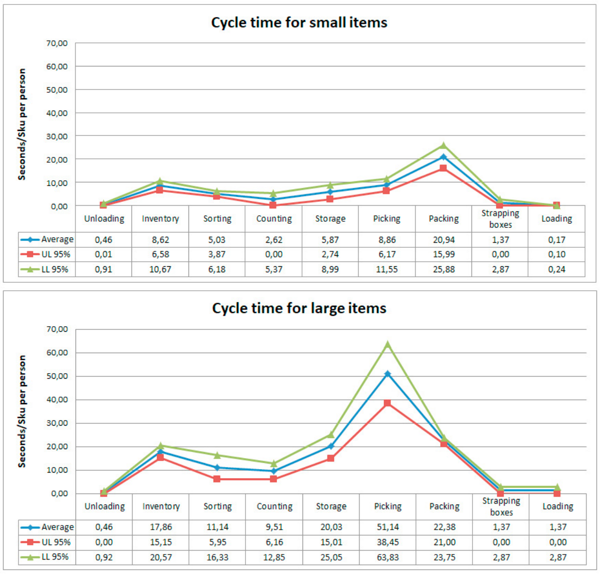
Finally, assuming a normal distribution and a confidence interval of 95%, where *Z* value is 1.960, the confidence limits (CL) were calculated using the following equation (4):

$$CL = \overline{N} \pm Z\frac{\alpha}{\sqrt{n}} \tag{4}$$

3.3.4. Results of the samples

For reasons of confidentiality, the times shown in this document do not correspond to the real values, but are proportional for the purpose of demonstrating calculations in this project. The results of the sample can be observed in the Fig. 7. As it is possible to observe in the figure above, high standard deviations were recorded. The effects of the results can be explained by the following points:

- Insufficient number of samples for some activities;
- Human involvement increases the probability of existing errors;
- External factors, like work environment, that affects productivity;
- Different levels of productivity from the workers.



	Unloading	Inventory	Sorting	Counting	Storage	Picking	Packing	Strapping boxes	Loading
Average	0,46	8,62	5,03	2,62	5,87	8,86	20,94	1,37	0,17
UL 95%	0,01	6,58	3,87	0,00	2,74	6,17	15,99	0,00	0,10
LL 95%	0,91	10,67	6,18	5,37	8,99	11,55	25,88	2,87	0,24

	Unloading	Inventory	Sorting	Counting	Storage	Picking	Packing	Strapping boxes	Loading
Average	0,46	17,86	11,14	9,51	20,03	51,14	22,38	1,37	1,37
UL 95%	0,00	15,15	5,95	6,16	15,01	38,45	21,00	0,00	0,00
LL 95%	0,92	20,57	16,33	12,85	25,05	63,83	23,75	2,87	2,87

Fig. 7 - Small and large items cycle times.

3.4. Value Stream Mapping – the proposal

The preliminary value stream mapping provided obtained a reliable picture of the current situation and allowed a better identification of the improvement opportunities, by operational flow leveling, waste reduction and increase of productivity. After analyzing the data collected and the work environment implications, a set of improvement opportunities were planned and implemented. In order to make the procedure of the proposed improvements possible, a new value stream has been mapped, as shown in Fig. 8.

As it is possible to note in the Fig. 8, in the changes proposed stands out the following topics:

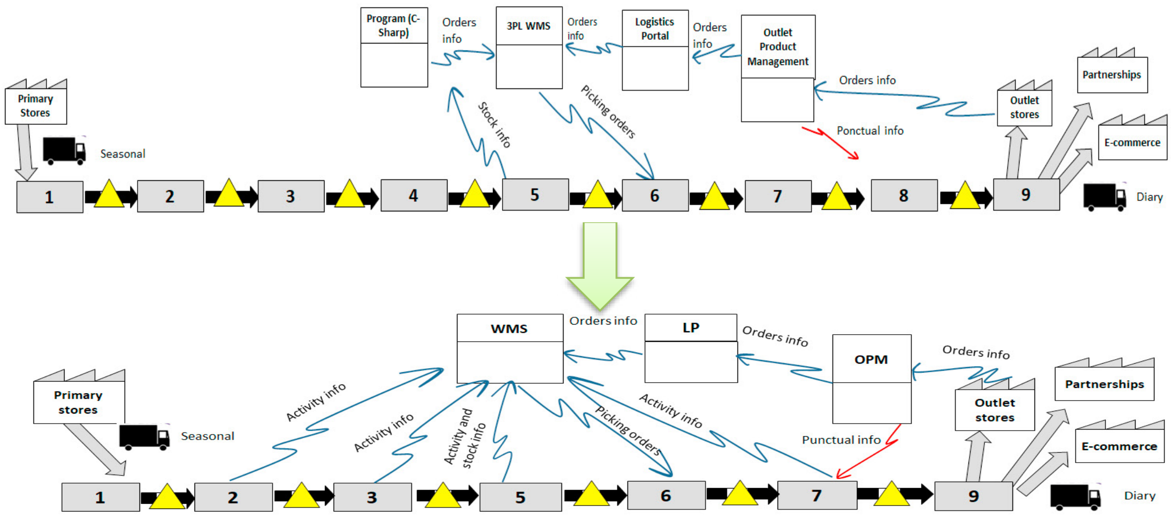


Fig. 8 - VSM - the state before vs the state proposed.

- The development of a single WMS that controls the whole operation and allows a more efficient and effective flow of information – during the project investigation, some deficiencies were identified in the information that was collected, and it was denoted that investments in information systems are needed.
- The absence of the counting and strapping boxes processes, as they have not been fully eliminated but aggregated to other processes. For example, the activities digitalization made some processes unnecessary, like the counting process. This measure was proposed in order to allow stocks and product lead time reductions, promoting more effective activities.
- Some other improvements not clear in the analysis of the VSM were also proposed, in order to improve the effectiveness of the RL activity, such as:

• Changes in the layout ensuring a U-Shape product flow in order to reduce stocks, distances and time;
• New equipment and workstations;
• 5S's – promote more organized work;
• Try new ways of operating – people are always able to find new ways of doing things better and faster, only needing to be creative and, most importantly, try. If it works, just do it.

4. A Fashion RL conceptual model

As best practices should be never forgotten, they should be always preserved and shared. Conceptual models capture our current understanding about the structure and working of a system [25]. Argent et al. [25] also state that its practice can vary from completely informal to highly ordered and structured mapping [26].

This project aims at providing a simple framework-based Fashion RL conceptual model (FRLCM) that can be adapted in similar realities. In the interest of achieving the conception of the conceptual model, it was adopted an empirical methodology based on the following steps: (1) Analyzing of existing models in the literature; (2) Comparison with the RL activity presented in the case study; (3) Determination of the model's content.

Step 1 - Analyzing of existing models in the literature

As there has been previously referred in the second section of this paper, several models that can be applied to RL have been studied in this paper, but for the purpose of this project, there has been only selected a structural framework, delivered by Lambert et al. [14] referred as Lambert et al. model for the remainder of this paper, for the modelling trial. Despite of the other structural models, that have been also considered, this framework has been selected firstly because it shows the elementary basis of a general RL activity, secondly because it is suitable for the project goals, and finally it grants a translucent perspective of the RL best practices to the reader.

Step 2 - Comparison with the RL activity presented in the case study

In the case study presented in the section 3 all the processes that added value to the 3PL RL activity were identified, using VSM tool. The mapping of the proposed state supported the selection of the processes that generates value. In the case study were detailed seven activities that should be a part of a 3PL FRLCM: 1- Unloading, 2- Inventory, 3- Sorting, 4- Storage, 5- Picking, 6- Packing and 7- Loading.

Step 3 – Determination of the model's content

This final step can be considered as the combination of the first two steps: after observing the literature and selecting the Lambert et al. [14] model and mapping the RL activity value-added processes, there have been compiled the selected elementary basis for an effective outsourced RL activity in the Fashion Industry. Making a small synthesis, as it is possible to observe in the Fig. 9, the new model shows that, after the return of the goods from the primary stores, the product should be collected and unloaded in the 3PL (1) Consequently, the fashion items should be inventoried (2), sorted by stock-keeping unit (3), and stored in racking systems (4) in the warehouse (inbound activities). When the items are ordered, they should be picked (5) and packed (6) and finally loaded in the trucks for expedition (8) to the outlet and online stores (outbound activities). All this has to be supported by integrated information (WMS) (9) and coordinating systems or what it could be called management (8).

The content of the conceptual model was solely based on the case study experience and the evaluation of the literature review presented on this paper, which indicates that naturally this model can be improved along time. Yet, it remains a shared experience that can be used as literature support for the reader that desires to study or implement a new RL activity.

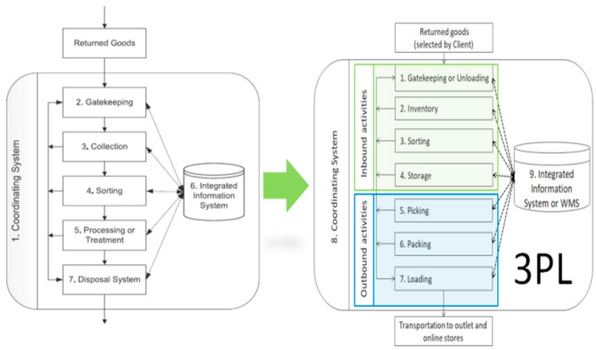


Fig. 9 –Model adaptation to the Fashion RL by 3PL conceptual model. Adapted from Lambert et al. [14]

5. Conclusions

After the study, presented in the paper, many of the planned actions were implemented in the RL activity. Unfortunately, the resulting data were not available to share in this document. However, it is possible to point out that, at the end, there was registered an increase of about 30% of the global productivity, allowing a significant reduction of costs, as well as an improvement of the operation quality.

Despite of the gains achieved, there is still a considerable margin for improvement. The literature review has shown that RL is a field that has been poorly explored in the last years by the enterprises. When [14] estimated that RL would only represent an average of 4% of enterprise logistics costs, it immediately explained why they focus so little on this topic. Also the literature has revealing that online market is still growing, even the increasing of the product fees as well as the environmental issues, invest in RL by companies still remains a good opportunity to get huge benefits in a short term.

Comparing the case study to the state of art, it was denoted that the model used by the studied companies, is very similar to models presented in the literature. Also, this is a market to be explored in Portugal, since there are not many companies specialized in this type of market. The use of the VSM allowed the promotion of a general panorama of the activity, assisting the identification of operational gaps and naturally improvement opportunities. For instance, there was identified a clear need to upgrade the information systems. Process observations afforded the project team to earn a different susceptibility of the shop-floor activities. It promoted new perspectives of operating, motivating to try new ways of working and the redesign of the layout. The conceptual model for fashion outlet retail activities presented in section 4 is mainly a mirror of the activity mapped in this project, as it should be prudent to compare it to other models used in other fashion companies. Unfortunately, it was not possible to benchmark similar activities.

Acknowledgments

Teresa Pereira acknowledges the financial support of CIDEM-Research Center of Mechanical Engineering, FCT – Portuguese Foundation for the Development of Science and Technology, Ministry of Science, Technology and Higher Education, under the Project UID/EMS/0615/2019.

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