Reverse Logistics Companies' Perspective: A Qualitative Analysis

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Abstract Reverse Logistics has been object of great interest essentially in the consumer's culture change, in the competitiveness and in the increased environmental, and obviously due to its economic potential. In Portugal, Reverse Logistics is an unfamiliar word in the business world, specifically in SMEs. The present research focus to describe the Portuguese companies' standpoint and knowledge based on two aspects: the concept and the return of products. To verify the different companies' perspectives, semi structured interviews were applied in ten Portuguese Companies, of different size and in diverse industrial sectors. The qualitative data analysis was developed with the support of the webQDA software. The interviews analysis gave the opportunity to understand that large companies are aware of Reverse Logistics, in contrast to the SMEs' scarce knowledge. Related to the Reverse Logistics strategies applied to the product returns, this research has showed that the reuse of the products or their sale to the scrap or recycling industries as the most common strategies, although some particularities depending on the type of industry.

Keywords Multicases study · Qualitative analysis · Reverse logistics · WebQDA

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1 Introduction

In today's modern business environment, Logistics evaluate not only direct flows but also allows companies to consider undirected flows activities and supply chain information as an important part of Logistics (Lopes 2009). The strong competitiveness, the short life cycle of products, the laws pressure and the ecological awareness are some examples that demonstrate the importance of the development of Reverse Logistics process (Lopes 2009; Pokharel and Mutha 2009).

In simple terms, Reverse Logistics can be thought for as the process of collecting and transporting used or unwanted products from a customer or retailer site to an appropriate facility where the remaining product value can be recovered. In other words, Reverse Logistics refers to the distribution activities involved in product returns, source reduction/conservation, recycling, substitution, reuse, disposal, refurbishment, repair and remanufacturing (Akdoğan and Coşkun 2012). Reverse logistics is rapidly becoming an integral component of retailers' and manufacturers' profitability and competitive position. Product returns are the most common aspect of reverse logistics. Still, most companies do not handle returns as important as they should since they do not consider as part of their core competencies. Increasingly, reverse logistics must be considered part of a successful growth strategy. Nowadays, is essential to have an asset recovery strategy. Returns, repairs, and used items can also have branding implications (Silva et al. 2013). Furthermore, an efficient Reverse Logistics system can transform an expensive and complex return process into a competitive advantage for the company. The benefits will be evident if the processes and the execution are well defined.

The present work is part of a wider research project that analyzes and characterizes Portuguese companies' perspective based on three aspects: The Concept, the Returns and the Environment. Rubio et al. (2008), Lambert et al. (2011), Reddy (2011) are some examples of relevant publications on Reverse Logistics with emphasis in concept, product returns and environmental impact. Herein, the investigation will focus on the companies' knowledge concerning Reverse Logistics Concept and on the Reverse Logistics strategies applied to product returns. The webQDA qualitative software (Neri de Souza et al. 2011) was used to analyze the contents of the interviews scripts helping understand the present companies' Reverse Logistics perspective.

2 Reverse Logistics

It is no surprise that almost every company is looking for ways to improve their name and image, increase sales, decrease costs and risks. But in such tough economic times, the easy cuts have been made and all of the simple process improvements have been put in place. It is here that Reverse Logistics comes. Many authors have suggested many definitions for this concept and the most widely

accepted definition of Reverse Logistics (RL) comes from European Working Group on Reverse Logistics, REVLOG. They define it as: "the process of planning, implementing and controlling backward flows of raw materials, in process inventory, packaging and finished goods, from a manufacturing, distribution or use point, to a point of recovery or point of proper disposal always with the purpose of capturing value" (Rubio et al. 2008).

Effective RL focuses on the backward flow of materials from customer to supplier with the goals of maximizing value from the returned item and/or assuring its proper disposal. This may include product returns, source reduction, recycling, substitution and reuse of materials, waste disposal, refurbishing, repair and remanufacturing (Autry 2005).

Reverse logistics processes and research has traditionally emphasized green logistics, i.e., the use of environmentally conscious logistics strategies (Lambert et al. 2011; Autry 2005). While environmental aspects of RL are critically important, many firms are also recognizing the economic impact of RL (Klausner and Hendrickson 2000). As a result of the aforementioned pressure, companies have adopted environmental practices increasing the investment in clean technologies and in the redesigning of processes and organization (González-Torre and Adenso-Díaz 2006). RL contribute to the expansion of customer service, satisfying requirements and expectations. It will be a matter of time until to understand the importance of put the Reverse Logistics as a part of Logistics system and a prominent position in the companies (Lopes 2009; Pokharel and Mutha 2009).

Almost every day, a customer, for any number of reasons, returns a product. Maybe the product was defective, or not in accordance with the specified, or it was the wrong size, or they are unhappy with the functionality of the product (unfulfilled expectations), and sometimes customers return products because they discover an alternative product with better functionality after they have made the purchase and others reasons. Whatever the case up until recently, manufacturers spent relatively little effort addressing the causes and effects of product returns (Blanchard 2007).

Once a product enters the RL flow, the logistics manager has to decide where the product has to be sent: either returns to vender, to the landfill, or to the secondary market. There exist seven channels for disposing the products that have been returned to the manufacturer: the return to vendor, sell as new, sell via outlet or discount, sell to secondary market, donate to charity, remanufacture/refurbish and materials reclamation/recycling/landfill. Based on the condition of the returned product, contractual obligations with the vendor, and the demand for the product, the manufacturer has one or more of the above options to dispose the returned product (Reddy 2011).

A quick and efficient handling of returned product could also be critical in sustaining relationships and creating repeat purchases (Autry 2005). For this reason, firms are more willing than ever to accept returns from customers. As a result, liberal return policies have become a standard marketing practice and a major component of the corporate image for many firms in both business-to business and business-to-consumer markets. The complexity of managing damaged or defective

goods, product recalls, maintenance and repairs, and recycling should make RL programs a high priority.

3 Research Method

In order to understand and analyze the different companies' perspective, the research group applied a qualitative methodology. Unlike what happens in quantitative research, in qualitative methodology the research is more focused to find the cause-effect relationship. In qualitative methodology, each true it is relates with a context and a specific time.

In this study, the events of interest are unique within a context of real life, featuring an exploratory character and aiming to answer the research questions. A case study was used to assess the strategic factors to clarify the questions that require further research (Schultmann et al. 2006). Case study means a close analysis of the practice, together with the circumstances and its characteristics leading to an understanding of the situation within its own context (Brito 2014).

The case was the knowledge and perception of the Portuguese companies regarding Reverse Logistics Concept and Strategies within the context, the companies' settings. Interviews, one of the most common methods of data collection used in qualitative research, has one of the most powerful ways to understand the others perspectives and it's a powerful tool to capture the diversity of descriptions and interpretations about what people know on the field.

3.1 Methodology

To fulfill the objectives of the present work, an exploratory and descriptive research in real context was applied based on a multiple case study (Yin 1994). The guidelines selected for the methodology were based on five steps: (1) determination and definition of the research questions; (2) selection of the companies in northern Portugal and definition of semi-structured interview guide; (3) preparation of the formal email of invitation to be sent, guide definition and rules establishment for confidentiality; (4) data collection procedure in the field according to company/researcher agreed schedule and data base case study development; (5) analysis of the qualitative data and report preparation.

3.2 Sample Data Characterization

The research explores companies' of different type of sector and sizes in northern Portugal. The study focused the North by the large number of companies/industry located in this region (INE 2014). Thirty companies were contacted by a formal email enlightening the project and requesting collaboration. Later, it became

necessary to contact by telephone due to the low number of participations in this first stage. One of the reasons of this low acceptance in the first contact could be the lack of RL word knowledge. Sentences like: "*I don't know what it means, so I can't help you*", "*We don't practice it*", "*That is a modern name for Logistics?!*", were used as justifications and resistance to talk and to take part in this study.

Ten companies accepted to collaborate in this study. Apparently this sample size can be considered small, however, and according to the time limit restriction of the study, this value was considered to be adequate for the research offering support to research aims and objectives (Baker and Edwards 2012). In some way, the sample was balanced in terms of size and type of activity: four Large Enterprises (LEs) and six Small and Medium-Size Enterprises (SMEs). Concerning industrial sectors and type of activity, two companies from the automobile components sector, two in the cutlery industry, one in the food industry, one in the drink industry, three in the aluminum industry and one in the retail industry. The participants are managers (M) or logistics directors (LD). Eight participants have higher education (six in engineering and two in business management), and two have compulsory education. In turn, the years of service varies between 2 and 32 years (see Table 1 for more details). Only one of the participants was female.

Table 1 Sample Characterization

Enterprises	Size	Industrial sector	Role	Higher education	Years service/age/gender
1	SMEs	Cutlery	M	Compulsory education	32/58/male
2	SMEs	Cutlery	M	Business management	20/45/male
3	SMEs	Aluminum	M	Mechanical engineering	77/33/male
4	SMEs	Aluminum	LD	Industrial management engineering	2/27/male
5	SMEs	Aluminum	LD	Mechanical engineering	5/34/male
6	SMEs	Food	LD	Agronomic engineering	3/32/female
7	LEs	Automobile	LD	Compulsory education	22/45/male
8	LEs	Automobile	LD	Industrial management engineering	12/42/male
9	LEs	Drinks	LD	Chemical engineering	5/54/male
10	LEs	Retail	LD	Business management	7/35/male

LEs Large enterprises, *SMEs* small and medium-size enterprises, *M* managers, *LD* logistics directors

3.3 Data Collection

After the definition of the research questions (*R.Q.1* and *R.Q.2*, identified in Table 2), semi-structures interviews were preferred in order to collect data allowing an individual and comparative study, including, whenever possible, corroboration or opposing findings from literature reviews. Semi-structured interview were conducted since, nevertheless the questions pre-defined order it can easily be changed depending on the flow of the discussion, i.e., it is possible to address questions in the appropriate time according to the interviewee's answers.

Most of the questions considered for the semi-structured interviews were either taken directly or inspired by the methodology developed by Reddy (2011). It included 13 predetermined open-ended questions, divided into 3 main topics: (1) the concept, (2) the products returns and (3) the environment. In this study the two topics, the concept and the products returns, will be discussed. The interview guide was sent to all the ten participants that accepted to be part of the study, one week before the interview; due to the sensitiveness of the topic, this approach sought to enlighten the participants about the nature of questions that need to be answered, giving them time to reflect and thus to be prepared.

Each interview did not exceed one-hour length; all of them were scheduled in agreement with the participant and recorded, on audio format with the agreement of the interviewees and the anonymity and confidentiality of data were granted.

Table 2 Research and interview questions according to the research dimensions (questions)

Research questions	Interview questions	Research dimensions
R.Q.1: what is the Portuguese companies' perception on reverse logistics?	Have you heard about the term reverse logistics? If yes, what do you understand by it? In your point of view, what is the importance of RL? What are the principal reasons for returns? Nowadays, in your opinion, the customers are more demanding?	Concept
R.Q.2: what is the perspective of Portuguese companies concerning the products returns?	How are the returns process adopted by your company?	Product returns
	What activity(ies)/strategy(ies) you apply, in order to get value from your products returns?	
	What are the principal reasons for returns? According to Franco (2010) "companies aren't prepared for the returns." What is your opinion?	

4 Data Analysis

All participants' interviews were transcribed and validated by each one of the interviewee. Then, and after the approval, all the reading transcripts were translated into English. In this step, a special attention was taken into account in order to guarantee the contents meaning and its details. For the qualitative data analysis of the semi-structured interview (organization and systematization of data) the authors made use of the software webQDA. The webQDA software supports the analysis of qualitative data in a collaborative and distributed environment. It focused on researchers who work in multiple contexts and need to analyze qualitative data as an individual or in-group in a synchronous or asynchronous way. It offers online and real time collaborative work as well provides a service to support scientifically research. The structure and functional organization of webQDA software is divided into three parts: (1) Sources, (2) Coding and (3) Question. The first area the research can put the data in different type (image, text, video or audio). In the second area the research create the dimensions, categories, subcategories. Exist a connection between the sources and the coding that contribute to organize the data and establish structured and interconnected between information. The third area has a set of tools that will help the research to answer the data.

For a better understanding of interviews information, the dimensions considered were the two R.Q. itself divided into categories: Concept and Products Returns. Each category has specific subcategories: RL knowledge, RL definition, and RL importance as Concept subcategories; and returns reasons and strategies as Returns subcategories.

The process of coding was conducted in different phases: after reading the data as a whole, the pre-defined codes were identified and confirmed in each of the interview responses. During this process a focus attention on potential distinct subcategories in the data was also carefully considered. Table 3 summarizes the process: participant's answers partition into words, phrases or sentences; and compilation into different categories according to its context and number of occurrences.

4.1 Findings Discussion

The perspective of nine men and one woman with several years of experience contributed to understand how LEs and SMEs enterprises face the concept and products returns and to perceive possible differences between companies' sectors and size.

Based on the opinions and perceptions of these ten Managers/Logistics Directors it was possible to answer the *R.Q.1: What is the Portuguese Companies' perception on Reverse Logistics?*

Table 3 The questioning process and webQDA tools

Questions	webQDA	Category/sub-category
What kinds of companies know the term RL?	Search for frequent words	Knowledge of the term RL
Is there any relationship between the term knowledge and company size?	Data matrix	Knowledge of the term RL by company's size (LE or SME)
What has been the companies' response about the importance of RL?	Search for frequent words	Importance
What are the principal reasons for returns?	Search for frequent words	Returns reasons
Is there any relationship between reasons for the returns and industrial sector?	Data matrix	Returns reasons by Industrial sector
What activity(ies)/strategy(ies) are applied in order to get value from the products returns?	Search for frequent words	Returns reasons
Is there a relationship between the type of strategies and the type of size?	Data matrix	Product return strategies by company's size

The concept was focused in three subcategories as follows: the RL knowledge, definition and importance. The last two subcategories were analyzed only by the five companies who know the term.

The results suggested that all the LEs (four) are aware of RL, and by only one of the six SMEs. Note that the SME' participant that new the concept is the youngest one and has a degree on Industrial Management Engineering (Enterprise 4, Table 1). Having in mind the definition of reverse logistics by REVLOG (Rubio et al. 2008), three companies (two LEs and one SMEs) state identical meaning: "*It is everything since the consumption point to the origin*", "*it's the close of logistics circle*" and the others (Retail and Drinks, two LEs) defined it according to the importance that RL have in their specific company, for example: "*For us Reverse Logistics is an important stocks optimization tool.*" Each company gave a definition similar to the one that can be found in the literature. However, and according to Kivinen (2002), each person has a different perspective of RL concept because that depends on which area they are inserted. So, it is important that each person indicate how the RL needs to be understood by all parts.

Concerning the importance of RL, all the companies agreed the importance and the benefits of RL as help to the process return minimize costs and help the environmental issues (use recyclable raw materials, reuse and others).

Based on the sub-question *R.S.Q.1: What are the principal reasons for returns?*, productive reasons were mentioned by the most companies: "*There are many specific products that it's need a lot technique or visual attention… and sometimes it happen production mistakes that aren't detected or detected later.*". Followed by transportations faults: "*Poor packaging*", "*During the transport route, the product*

may be damaged…". The aluminum and automotive companies indicated the same reason (production) and the other two big companies (drinks and retail industry) indicated different reasons (information flow and seasonal products), realizing that the reason connected with the type of industrial sector.

Concerning the second sub-question, *R.S.Q.2, What activity(ies)/strategy(ies) apply, in order to get value from your products returns?,* the strategies are connected to the direct recovery (Reuse and Outlet and Resale), disposal or reprocessing (Repair and Polishing), as illustrated in Fig. 1.

Concerning the RL strategies, it was observed that the elimination is the strategy most used by the companies (six SMEs and two LEs). Companies show the best way to make value from products returns is sell them to the scrap or industries that will transform the product in by-products. Moreover, the second strategy applied by seven companies (four SMEs and three LEs) is reuse. Although, this strategy was mentioned as a second option, six companies prefer reuse their products firstly and if they cannot be reused, they are eliminated. It was observed that all companies reuse their products except food company; two aluminum companies apply repair; one cutlery company transform their products by polish. The retail company was the only company to apply redistribution and resale products (seasonal products). It was interesting to understand that all Aluminum companies have the same opinion about use-recycled aluminum: "*It isn't easy to use recycled… by my knowledge the recycled aluminum hasn't a good behavior in some techniques, like anodizing, and the quality it's complete different if you use the first fusion.*" Contrasting opinions were reported in Logozar et al. (2006), which refer that the properties of aluminum are not affected by the recycling and reuse.

Based on the two-sub questions (*R.S.Q.1* and *R.S.Q.2*) the second research question could now be analyzed: *R.Q.2. What is the perspective of Portuguese Companies concerning the products returns?*

All the ten Portuguese companies share the same opinion that the customers are more demanding, and the competiveness and the liberation returns politic are some factors associated (Lee and Lam 2012; Amini et al. 2005; Figueiredo 2014): "*Today the demand is higher because there is more competition*"; "*All the customers are demanding, some times is the price, other is quality and others is the binomial price-quality… so it's very hard!*".

It was interesting to observe that six companies (three SME's and three LEs) agreed on that companies are not prepared for returns following the thoughts presented by Franco (2010): "*We think in our business like a direct flow. We don't*

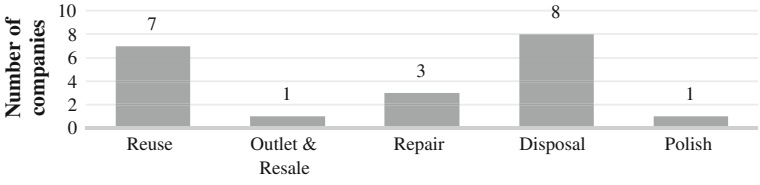

Fig. 1 Reverse logistics strategies related to the returns of products

think that what we produce someday can return", "*I agree for two reasons, the cost of packaging and the space that all those packs occupy.*" On other hand, three SMEs and one LE disagree: "*Increasingly, the companies are more prepared because things need to change and people begin to have more attention to this type of situations*".

5 Final Remarks

This paper presents the Portuguese companies perspectives and knowledge on Reverse Logistics. For that, semi-structured interviews were conducted in ten Portuguese companies of different size (SMEs and LEs) and in different industrial sectors (Aluminum, Automotive, Drinks, Food, Cutlery and Retail), located in Northern Portugal. These ten companies voluntary accepted to be part of the research study. The analysis of the interviews gave the opportunity to understand and answer the addressed research questions regarding a new concept: Reverse Logistics.

All LEs are aware of Reverse Logistics, and just one of the SMEs knew the concept. The participant of this SME is the youngest one and has a degree on Industrial Management Engineering. This may be related to the different organizational cultural, competitiveness and financial support between large and SMEs. So, Reverse Logistics can be considered as new concept for the Portuguese SMEs.

Related to the Reverse Logistics strategies applied to the product returns, this research has showed that the most common strategies are the reuse of the products or their sale to the scrap or recycling industries, although there are some particularities depending on the type of industry.

Since this is an on-going work, more research in this area is essential. The research study continues not only with a in-depth analysis of the data collected but also by extending the study to other areas, namely continuing professional enterprises' strategies, and using different data sources.

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