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Revealing an invisible giant: A comprehensive survey into return practices within original (closed-loop) supply chains

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ABSTRACT

Forward supply chain actors are increasingly involved in the full life cycle of their products and the packaging used. Where in the past these were disposed of via (public) waste management systems or sold in cascade markets, now returns management becomes key to focal companies. Moreover, recent literature emphasizes that returns can be a value creator rather than a cost of business as it can save the environment, provide critical resources and customer value. But relevant, up-to-date data on returns and return practices is scarce, whereas such data is essential to show the potential value of returns and make a business case for returns management to practitioners. Based on a global survey among manufacturers/wholesalers/retailers and third party service providers, this paper presents comprehensive descriptive statistics on and analysis of current return practices. We develop and test propositions on the drivers, volumes and value of different returns along the life cycle; show the inefficiencies in current return practices leading to value destruction instead of the advocated value creation; and compare return practices in different regions and industries. We also provide recommendations for converting value destruction into value creation. Although progress is slow, there are hopeful signals that the potential of returns managements will be unlocked in the near future.

1. Introduction

Products and other items such as packaging are returned from the market several times along the life cycle. Research shows that the value of commercial returns (returns immediately after sales) averages about 6% of sales (Guide et al., 2006; Rogers and Tibben-Lembke, 2001). In addition, customer rights to return products cause warranty, trade-in, and recall returns. At the end of the life cycle, end-of-life returns occur due to increasing legislation on mandatory take-back. For a long time, returns were seen as a necessary evil, which is illustrated by Thierry et al. (1995) who described product recovery management as the management of all discarded, unsold, unwanted or defect items (products/packages/pallets) to which a (manufacturing) company is legally, contractually, or otherwise responsible.

Recent literature uses the term closed loop supply chain management, which is "the design, control, and operation of a system to maximize value creation over the entire life-cycle of a product with dynamic recovery of value from different types and volumes of returns over time" (Guide and Van Wassenhove, 2006, p. 349). Seen from a supply chain angle, returns can reduce environmental impact, create customer value, and provide resources. Potential revenues often exceed the out-of-pocket costs for operating the return channel (Hauser and Lund, 2003). But relevant, up-to-date data on returns and return practices is scarce, whereas such data is essential to show the potential value of returns and make a business case for returns management to practitioners (Guide and Van Wassenhove, 2006).

This paper aims to contribute to the literature by presenting comprehensive descriptive statistics on and analysis of current returns practices. From an academic point of view, research on returns management has predominantly relied on normative quantitative research methods (see Fleischmann et al., 1997 for a review) and case studies (see De Brito et al., 2005 for a review). Purely conceptual papers are also common (Thierry et al., 1995; Toffel, 2003). Prahinski and Kocabasoglu (2006) state that survey-based empirical research on returns management is a valuable research opportunity and complementary to existing research in that it can be used to provide results that can be generalized to a broader group of companies, thereby addressing the needs of the business community. Due to restrictive access to data and respondents, a survey methodology was used in less than 5% of the recent

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returns management articles (Verstrepen et al., 2007). Some studies covered returns volumes and drivers as well as recovery options (Daugherty et al., 2001; Stock and Mulki, 2009; Rogers and Tibben-Lembke, 1999, 2001; Tan and Kumar, 2003; Verstrepen et al., 2007). Fewer studies investigated collection and reverse logistics systems (Scharff and Vogel, 1994). An important shortcoming is that most studies focused on a particular or a few types of returns (Autry et al., 2001; Chen et al., 2009; Feitó Cespón et al., 2009; French and LaForge, 2006; Guide et al., 2006; Škapa and Klapalová, 2012; De Koster et al., 2002; Zoeteman et al., 2010). As managing the life cycle is often seen as key success factor for products, organizations, and supply chains (Krikke et al., 2004), all types of returns should be studied integrally. Furthermore, most if not all studies had a limited geographical scope, such as the United States (e.g., Rogers and Tibben-Lembke, 1999, 2001; Stock and Mulki, 2009), Singapore (Tan and Kumar, 2003), Flanders (Verstrepen et al., 2007), Hong Kong (Chan and Chan, 2008), Czech Republic (Klapalova, 2010), and Cuba (Feitó Cespón et al., 2009). Comparisons between regions may give additional insights into the drivers and effectiveness of solutions. Finally, research incorporating multiple perspectives including service providers is scarce (Blumberg, 1999). In conclusion, the literature is rather fragmented.

We contribute to the body of knowledge by developing and testing propositions on the drivers, volumes and value of different returns along the life cycle; showing the inefficiencies in current return practices leading to value destruction; and comparing return practices in different regions and industries. We complement and update empirical data as some references are over 10 years old and give handles in order to convert value destruction into value creation.

The set-up of the paper is as follows. In Section 2, we review existing knowledge on returns management practices, in particular survey-based studies and develop propositions. Section 3 describes the methodology underlying the survey, Section 4 the findings, Section 5 a discussion of the results, and Section 6 final conclusions.

2. Literature review

2.1. Types, volumes, and value of returns

According to Rogers et al. (2002), the largest category of returns are commercial returns with values ranging from 5% to 15% of sales in catalogue retailing (Autry et al., 2001) to even 35% for e-commerce retailers (Gentry, 1999). Warranties and recalls are also an important concern, especially in the early period after sales (Stock and Mulki, 2009; Tan and Kumar, 2003).

We distinguish between returns early in the life cycle (commercial and warranty returns) and returns later in the life cycle (end-of-use (EOU) and end-of-life (EOL)). Early returns preferably go back to the original market. EOU returns involve all items returned which—after some period of operations—are of no longer use to the original owner, but for which new customers can be found in cascade markets, possibly at lower prices (Guide and Van Wassenhove, 2001). The original supply chain, in particular the brand owner, is responsible for returns at the end of the life cycle, effectuated by environmental regulations. In this paper, the EOL stage equals 'waste' which is always reached at some point in time. As a consequence, EOL returns exceed commercial, recall, and warranty returns in volume. Yet they only represent material value as reuse is no longer possible or viable. Note that EOU products may also be subjected to producer responsibility and that in some EU countries reuse is applied in national WEEE schemes (O'Connell et al., 2012). The final type of return that we consider is packaging (including carriers like pallets), which might be one-way (destined to be recycled) or re-usable, e.g., reusable containers or refillable

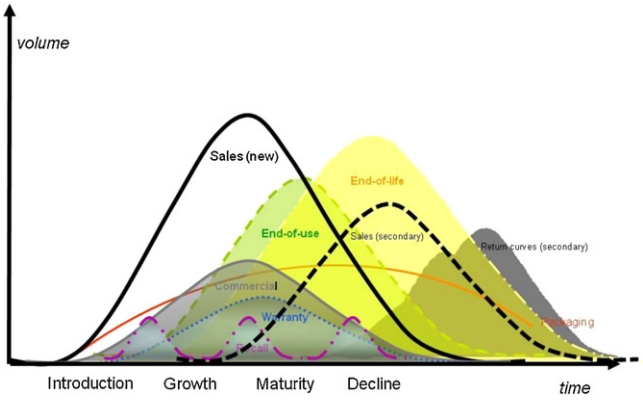

Fig. 1. Product life cycle and return types.

cartridges. Returns volumes range from 10% to 60% of forward volumes (De Koster et al., 2002). This type of returns exists throughout the life cycle. Fig. 1 maps the timing and volume of different types of returns across the product life cycle and relative to new and cascade sales. Please note that we consider here the economic product life cycle from market entry to phase out (cf. marketing textbooks such as Brassington and Pettitt, 2003). The surfaces represent total volumes of products sold (new) and returned at different moments in time. The figure is conceptual and based on data found in the literature. For example, recalls do not occur exactly three times during any products' life cycle. Actual volume and timing of returns may vary strongly per industry and geographical area. However, we argue that the size and shape of the areas under each curve do give a reasonable indication of the magnitude of actual forward and return flows. From Fig. 1, it follows:

Proposition 1. *The total volume of returns over the life cycle exceeds the volume of initial sales.*

Early returns still have product value and for that reason their mere existence represents a major financial loss. Later returns can be recycled at the material level, which is often mandated by regulation, such as in the European Union. Industry is not always keen on regulation as the costs involved often exceed the (perceived) value of the recycled materials (Mayers, 2007).

Proposition 2. *Most value is lost by returns early in the life cycle.*

Tan and Kumar (2003) state that returns management traditionally aims at minimizing losses. Little research has been conducted on how to value the economic attractiveness of returns management (Guide and Van Wassenhove, 2001). Despite its potential value, there appears to be no decision framework for how to gain this value (Tan and Kumar, 2003).

Proposition 3. *Return channels focus on damage control and efficiency, value creation is not an issue.*

2.2. Drivers of returns

Obviously, the drivers of returns are strongly linked to the types of returns. Commercial returns are incurred by buyer dissatisfaction, perceived defects, a lower price elsewhere, and problems with installing and handling a product (Daugherty et al., 2001; Rogers et al., 2002). This category is often marked as broken but actually non-defective. Guide et al. (2006) report 80% of No Fault Found (NFF) for commercial returns of HP and 60% for Bosch Power tools. A remarkably large proportion (40–60%) of commercial returns is inflicted by mistakes in the (forward) supply chain; i.e., damaged and/or incorrectly shipped merchandize (Daugherty et al., 2001; Verstrepen et al., 2007). Warranty returns and recalls are increasing