CIPS Procurement topic

Reverse Supply Chain / Reverse Logistics

... [A] well-managed reverse logistics system allows the company to retain contact with customers and derive valuable feedback from them (O'Connell, 2007).

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Introduction

Reverse supply chain is an umbrella term for a number of models, all of which are built to carry out five key processes: (1) product acquisition, which refers to obtaining the used product from the user; (2) reverse logistics or refurbishing, the process that enables the most economically attractive options (e.g. direct reuse, repair, remanufacture, recycle or disposal); (3) inspection and disposition, recycling and the assessment of the return condition to make the most profitable decision for reuse through the reduction of the product to its basic elements; (4) remanufacturing, returning the product to original specifications; and (5) marketing or reselling, which refers to creating secondary markets for the recovered product and remarketing them in order to create and exploit markets for refurbishing and distributing them (Blackburn et al., 2004).

Often reverse models are not considered to be business processes. Instead, they are viewed as a series of fairly independent random activities. In addition many companies are more interested in the operational and tactical aspect, rather than the strategic, thus they passively accept returns from the markets or channels (Guide et al., 2003). In the 1990s reverse models were often associated with a high degree of uncertainty, complex diversity, descending value, multi-partner collaborative requirements, decentralised locations and the high cost of reprocessing equipment which discouraged companies from considering them (Rogers and Timbe-Lembke, 1998).

Over the last decade, however, reverse logistics demonstrated increasingly positive outcomes including but not limited to: financial benefits (profit saving), management of uncontrollable returns, higher customer service satisfaction, environmental benefits, various tax-related benefits, legislation benefits and better coordination of the company's supply chain through improved coordination of the forward and return supply chain processes (Stock, 2007; Verweij et al., 2008; Jingbo, 2011). For example, in 1993 Fuji Xerox operations in Sydney developed remanufacturing facilities and in 2000 it became the first company to achieve zero landfill of used products in Japan. Prior to the development of the remanufacturing facilities in Sydney valuable components would be considered waste even with minor defects (Benn and Dunphy 2004).

Definition

Reverse supply (also referred to as reverse logistics) stands for all operations related to the reuse of products and materials. It incorporates planning, implementing and controlling the efficient cost-effective flow of raw materials, in-process inventory, finished goods and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements (REVLOG, 2002).

Successful Application

The implementation of reverse models requires two basic processes: (1) removing new or used products from their initial point in the supply chain (e.g. returns from consumers, overstocked inventory, outdated merchandise); (2) redistributing these products using disposition management rules that will result in maximised value at the end of the item's original useful life. These two processes can be implemented in four different steps (Timbe-Lembke, 1998).

Steps to Successful Application

- Retrieve the product: the quality and quantity of the products retrieved must be coordinated with other distributors and customers.
- Transport the product: it should be efficiently transported to a central location to be inspected and sorted; determine what products can be saved, reworked, remanufactured, resold or disposed.
- Recondition the appropriate products: design for disassembly (DFD) is a method of designing products (e.g. electrical devices) so they can be easily pulled apart, reconditioned and reused; products that are not reconditioned should be recycled, resold for parts, or disposed of.
- Distribute and sell the reconditioned products: companies should create a market for their refurbished products which can be sold to the general public at cost or discounted price.

Hints and Tips

- It is important to elevate the priority of the returns process (Blackburn et al., 2004).
- Companies need to track/record time metrics in their returns process (Blackburn et al., 2004).
- Companies should ensure that the reverse supply chain is aligned with customer requirements and that there is coordination between the system processes and customer demands (Verweij et al., 2008).
- It is advisable to spend some time designing the right reverse supply chain model. Similarly to forward supply chains, the reverse supply chain can be designed for cost efficiency or for a quick response (Blackburn et al., 2004).
- Awareness that a customer-centric approach will add value is important (Verweij et al., 2008).

Potential Advantages

- Reverse supply chain models can help companies increase real-time visibility (Hommrich, 2005).
- Reverse supply chains lead to substantial environmental benefits which are mostly related to the process of recycling and reusing (Jingbo, 2011; Rogers and Timbe-Lembke, 1998).
- Reverse logistics can help companies comply with legislation, as it helps to eliminate and diminish waste (Jingbo, 2011; Rogers and Timbe-Lembke, 1998).

Potential Disadvantages

- It is very hard or even impossible to forecast and plan product and material return (Blackburn et al., 2004).
- Reverse logistics is really perceived as a cost driver and is considered to be making an insignificant impact on profit margins (Verweij et al., 2008).
- Reverse logistics can be a time-consuming process (Guide et al., 2003).

Performance Monitoring

- 'Green image': can be measured as the environmental expenses incurred, as the

amount of waste disposed or by the number of fairs/symposiums related to environmentally conscious manufacturing in which the firm participates (Gupta and Nukla, 2007).

- Innovation/improvement of the reverse supply chain: for example, R&D expenses ratio, the number of new products and processes launched (Gupta and Nukla, 2007).
- Public participation: a measure of the firm's marketing capabilities (e.g. flexibility), its ability to handle uncertainties, after-sales service efficiency which is defined as the ratio between the number of customers, seeking customer service to the total number of customers served (Gupta and Nukla, 2007).
- Responsiveness of the reverse supply chain: how well the company responds to changing customer specifications, level of customer service. Can be driven by indicators such as flexibility, the firm's ability to handle uncertainties, or its after sales service efficiency (Gupta and Nukla, 2007).
- Delivery reliability: a metric that reflects how well the firm meets due dates specified by customers, can be measured by indicators such as the effectiveness of the company's master production schedule, the usage of automated disassembly systems, the supply of used-products or the quality of used-products (Gupta and Nukla, 2007).

Case Evidence

- Volvo, a Swedish car manufacturer, anticipated the Swedish government passing a resolution holding auto manufacturers accountable for the disposal of vehicles. The company quickly implemented a reverse logistics process of salvaging and dismantling cars, generating revenues by selling the used metal, plastics and car parts. When fully implemented, the system resulted in a reduction of transaction costs to approximately 5% (Stock et al., 2002).
- Levi Strauss, in conjunction with Genco, a third party reverse logistics service provider, developed a returns-processing method that computed estimated costs, generated paperwork in advance of the product being returned and automatically matched the items with the prepared paperwork. As a result, the company reduced processing items to only 72 hours (Stock, 2007).
- Heineken uses a reverse logistics supply system which includes returnable packaging material (RPM), such as glass bottles, crates and kegs. The total returnable value of RPM for Heineken Europe is estimated at €550m. The inventory of craters in one particular brewery is estimated at 3,57m units, each of these having a unit cost of €3.50. In most cases, return percentages on crates are very high and close to 100% (Carrasco-Callego et al., 2009).

Further Reading/References

Web Resources

- Reverse supply chain
- Forum on reverse supply chain
- Blogspot on reverse supply chain
- Efficiency of reverse supply chains
- Sustainability and reverse supply chain

Books

- Reverse Logistics: Quantitative Models for Closed-Loop Supply Chains, Rommert Dekker, Moritz Fleischmann, Karl Inderfurth, Luk N. van Wassenhove, ISBN 978-3642073809
- Introduction to Management of Reverse Logistics and Closed Loop Supply Chain Processes, Donald F. Blumberg, ISBN 978-1574443608
- Web-Based Green Products Life Cycle Management Systems: Reverse Supply Chain Utilization (Premier Reference Source), Hsiao-Fan Wang, ISBN 978-1605661148
- Strategy for the Reverse Supply Chain: Applicability of the Lean and the Agile Concepts, Laura Daugnoraite, Kestutis Slaitas, ISBN 978-3838371603
- Dynamic Inventory Management in Reverse Logistics (Lecture Notes in Economics and Mathematical Systems), Rainer Kleber, ISBN 978-3540332299

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Video

Philips: reverse logistics

https://www.youtube.com/watch?v=Xfdgk_CyPYI

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