

# **The Reverse Logistics of Online Retailing, Its Evolution and Future Directions**

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**Abstract.** As online retailing has enjoyed substantial growth in the past decade, the need to deal with defective and/or returned products has emerged as a substantial cost for retailers. This cost, which may be just become the cost of doing business is rising and deserves attention. The physical movement of returned parts is called reverse logistics. This article investigates the evolution of reverse logistics, its importance, associated issues, the importance of good information, as well as discussing the future of reverse logistics and the relevant future research topics for both practitioners and academics.

**Keywords:** Reverse Logistics, Product Returns, Online Shopping.

## **1. Introduction**

Through the increase of online retailing, efficiencies of logistics, and changing customer requirements, the field of reverse logistics is an area of study that warrants relevant research. Reverse logistics is the practice of physically moving materials that a customer has already received, but wishes to return due to any number of different reasons. When a customer wishes to return a product, the original seller must organize, retrieve, and then determine an outcome for the returned product, all the while possibly shipping a new product to the customer.

Reverse logistics has changed dramatically from when a customer physically purchased a product at a brick and mortar store to today's environment where a product can be purchased

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online and returned without the customer ever having to step foot outside of their own home. This study seeks to explain the evolution of reverse logistics, the importance and significance of reverse logistics, the issues and cost of reverse logistics, the role of information systems in reverse logistics, and the future of reverse logistics.

## **2. The Evolution of Reverse Logistics**

Some may consider the beginning of reverse logistics Wal-Mart's generous return policy of the 1990's, but actually there are some very important dates that should be mentioned when understanding the evolution of reverse logistics (RL). Walden (2005) outlines some important events/dates in the field of reverse logistics as:

- Montgomery Ward's return policy if the customer was not 100% satisfied, as being the root of today's return policies.
- Remanufacturing practices during World War 2 when the automotive parts needed to be rebuilt.
- 1984 Tylenol recall of a product that had to be quickly retrieved from the store shelves.
- 1991 Germany passed recycling ordinances leading to materials moving backwards throughout the supply chain.
- In 1996, shippers and manufacturers were legislated by the United Kingdom to be responsible for the collection and recycling of their packaging materials.

Though these events and dates provide an outline to the origins of RL, the increase in online shopping and customer requirements have made reverse logistics relevant to many companies and individuals.

E-commerce is growing in popularity all around the world; specifically, Americans purchased approximately \$259 billion worth of items online in 2013, a growth of almost 15% from the previous year. (US Census, 2013). The growth rate of online shopping is expected to be in the double digits for several years. The high growth rate of tablets in the past two years has substantially impacted the growth of online shopping. In 2012, tablets as a device for e-commerce surpassed mobile phones, growing from 2.8% to 6.2% from 2011 to 2012 (Adler, 2013). At the end of 2013, tablets continue to be the preference of the American consumers when shopping online due to the larger screen size, thus average order values, retail traffic, and conversion rates are higher on tablets than smart phones (Adler, 2013). By

2016, it is expected that tablets will account for nearly 17% of online purchases (Adler, 2013).

When it comes to the type of products consumers around the world are purchasing online, electronic products are consistently the most purchased accounting for 22% of the total online sales globally and within the United States (MarketLine, 2013). Combined books, music, videos, apparel, accessories and footwear account for approximately 30% both globally and within the United States (MarketLine, 2013).

With the volume of online shopping growing at a rapid pace, the number of returns is substantial. It has been stated that over 20% of individuals that shopped from home have returned an item in a 3-month window of time (Wright, 2013). Out of those studied, 79% stated that if they were charged for the return they were unlikely to buy from that online vendor again and 64% said the same if they were to have a difficult return experience (Wright, 2013). This study leads to 2 conclusions that are evident in research of RL. The first is that customers want to be able to easily return a product for free. The second is that there is, and will continue to be a large number of returns due to the practice of online shopping.

The reasons for returns can vary. Returns can fall into many different categories, but Chan, Chan, and Jain (2012, p.1320) outline five different areas:

- 1) Unavoidable Returns
- 2) Environmental and Green Returns
- 3) Enforced Legislation
- 4) Economics
- 5) Corporate Citizenship

Unavoidable returns can deal with a defective product. For example, the Michelin Tire Company issued a recall of 1.2 million tires in the United States in 2013 (Autonews, 2013). Once the decision for the recall is made, the logistics of dealing with the recalled tires becomes necessary. This task can be done creatively as demonstrated by the use of recalled Firestone tires as the turf for the National Football League's Detroit Lions, Ford Field Stadium (Ford's Troubled, n.d.). No matter the end use, there must be a decision made on how to deal with the defective products and RL plays a role in the physical movement of those products.

Environmental and green concerns are also an area of consideration for return policies. As consumers become more focused on the environment, “greening” RL may be an applicable strategy. “Fleischmann et al. (2001) mentioned that people are amendable to green branding and the setup of new markets for returned goods” (as cited in Chan et al., 2012, p. 1320). Since RL already works in an environment of regulations and limits, adding sustainability concepts into a RL system could possibly provide a business model that “will focus on the integration between customers, investors, employees, political leaders and industry alliances.” (Vahabzadeh & Yusuff, 2012, p 39.) Green thought processes may provide a successful RL marketing direction, especially when coupled with the requirements set forth in growing environmental legislation.

As mentioned earlier, both Germany and the United Kingdom have legislated green procedures that deal with RL. Not knowing the future of legislative practices is an uncertainty for many organizations; however in the field of RL it seems that the best practice may be to implement a green RL policy. The reason being, because it does not seem likely that environmental regulation of RL in the future will become less green.

Economics is listed as a key driver. The economics of remanufactured products is substantial. “In Europe and the US, as high as 70% of returned cell phones could be reused economically (Franke et al. 2006)” (as cited in Chan et al. 2012, p. 1320). Viewing returns as potential raw material or components for producing a sellable product may entice firms to better develop their RL systems.

The final driver listed by Chan et al. (2012), is Corporate Citizenship. From a marketing perspective, maintaining a brand image is crucial and being seen as a company that is focused on being a responsible corporate citizen may be an image that companies want to pursue.

However, the RL evolution and key drivers are almost mute without an understanding of the importance of an effective RL policy. In the following paragraphs, the importance and significance of RL is described.

### **3. The Importance and Significance of Reverse Logistics**

The ease of return has been shown to be important to customer decisions. Robert and Tibben-Lemke (1999) found in their survey that 63% of their respondents thought that a

clear and attractive return policy was one of the most important aspects for an organization (Manufacturers and Retailers) to stay competitive. Two other surveys by Pinkerton (1997) and Trager (2000) found that over 70% of consumers stated that they investigate the organization's return policy before they decide to shop. (Hsiao and Chen, 2011)

Lenient return policies seem to have a positive impact on purchasing behaviors. Postreturn spending has been shown to jump 158% to 457% to that of prereturn spending (Bower and Maxham, 2012). Padmanabhan and Png (1997) found that lenient return policies can be a competitive advantage. Furthermore, lenient return policies can also lead to a decision to purchase the product in the first place (Chu, Gerstner, Hess, 1998; Nasr-Bechwati & Sigal, 2005). However, there have been multiple studies that show a disadvantage to a lenient return policy because it can lead to both abuse and fraud (Wood, 2001; Davis, Hagerty, & Gerstner, 1998; Russt, Zahorik, and Keiningham, 1996). The research suggests that a lenient return policy has a positive impact on customer behavior, but the cost of RL also deserves investigation.

#### **4. The Issues and Costs of Reverse Logistics**

Though customers seem to prefer lenient return policies and organizations are realizing that a return policy is necessary, there are problems that arise out of a lenient return policy. Fraudulent returns and cost of returns are areas that need to be investigated.

Fraudulent returns are expensive for organizations. A fraudulent return is a when one purchases a product without the intent of keeping the product. Perhaps the most well-known form of this abuse is "wardrobing" or "renting" – in which the person makes a purchase, uses the product(s), and then returns the merchandise. (National Retail Federation, 2012) According to NRF's 2012 (National Retail Federation, 2012) Return Fraud Survey, fraudulent returns can cost organizations more than \$9 billion on an annual basis.

Cost is another issue that organizations need to consider. Product returns cost \$100 billion in lost sales and reverse logistics annually, which costs the average retailer or manufacture about 3.8% (Blanchard, 2007). In 2011, consumer electronics returns rose 21% from 2007 to \$17 billion dollars. (Douthit, Davide, Flach, Michael, and Agarwal (2012).

The cost of RL is a large consideration for online retailers. The main reason being because they have already sold and delivered the product seeing the profit of the sale, only to not

only see the profit removed, but more cost associated with that loss in the form of RL cost. Collection costs are a major cost to companies (Wright, 2013).

There are also cost that are hidden in RL. Reece and Norman (2006) identify 6 hidden costs of RL. They are:

1. Labor costs
  - a. Customer relations labor costs
  - b. Customer service labor costs
  - c. Financial reconciliation labor costs
  - d. Sales labor costs
  - e. Traffic and shipping labor costs
  - f. Receiving and warehousing labor costs.
2. Grey Market items –returned items sold in other distribution channels
3. Lack of visibility- Customers want to know status of their returns and will continue to call and email until they learn the status
4. Inability to forecast accurately – return information can be hidden and therefore there is not enough correct information to forecast
5. Credit reconciliation – returns can cause problems in reconciling financials.
6. Poor response time and brand toxicity- if it takes a long time to deal respond with a return, it could look bad to the brand.

A report by Accenture (Douthit, Flach, & Agarwal, 2011) illustrates the costs in as a percentage of the returns classifying returns into 5 different categories. The first category is NTF or No Trouble Found, Returns processing costs, liquidation by the OEM, liquidation by the retailer, and the warranty reserve. Specifically in the area of consumer electronics they found that 95% of returns were not connected to a product defect, only 5% of products were returned due to a defective product. This information is relevant because of the cost associated with testing a returned product to determine the issue (Douthit, et al., 2011). Furthermore, this study found that the total landed cost associated with a product return was between 5 and 6 percent for manufacturers and 2 to 3 percent for retailers, meaning that a 1% reduction in product returns is substantial.

## **5. The Role of Information Systems in Reverse Logistics**

Information systems have been shown to play a role in RL. Sharif, Irani, Love, and Kamal (2012) found that information systems (IS) directly influence the performance of RL in the terms of cost, processing and operating-level effectiveness. Qualitatively, they also found that both IS and resource commitment were crucial factors in the development of both an effective and efficient RL system. It was also shown that IS can play a very important role in RL by linking with business partners so that information on returns was freely available leading to changing business decisions such as production schedules (Sharif, et al., 2012).

## **6. The Future of Reverse Logistics**

The future of RL may lie in a different area than what is currently occurring. The argument for a typical third-party logistics (3PL) organization has traditionally been that the business of efficient logistics is not a core competency of a producing organization. Therefore, it is better for that organization to hire a 3PL to manage their logistics and spend more time and energy focusing on their core competency. This same argument may have merit in the field of RL.

The growth of 3PLs has been dramatic. A study published by Armstrong and Associates (3PL, n.d.), shows a growth of over 115 billion dollars in 3PL gross revenues from 1996 to 2013. Global 3PL is a \$676.9 billion (US dollars) business with a growth rate from 2011 to 2012 was 9.9%. The majority of the growth globally was in Asia-Pacific with a 23.6% growth rate, followed by Latin America with a 12.4% growth rate. There may be many different reasons for the growth of 3PL, but the growth of the Asian market seems to be a major factor. With the growth of a global economy, global and reliable logistics, reverse logistics may provide the possibility of a third party dealing exclusively with reverse logistics.

Traditional reverse logistics pattern may be viewed as a rather simple approach. The customer that purchased the product returned it to the brick and mortar store, where the store then had to decide how to deal with the returned product. This approach is illustrated in Figure. 1.

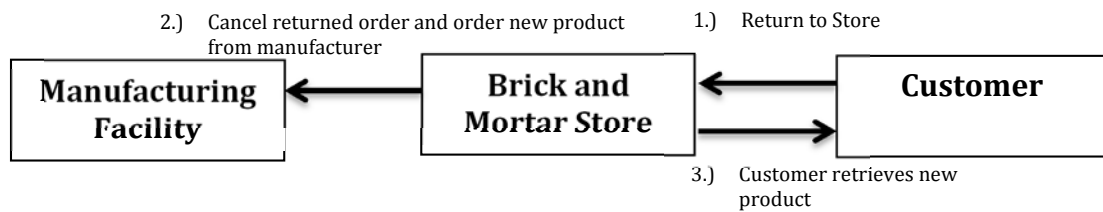


Figure. 1

However, through the volume and need expressed in the previously cited literature, there has become a need to return products at a faster rate. This has placed more stakeholders in the system of reverse logistics. Now, when an online purchase is made, the customer may never go to the brick and mortar store. This means that the product was shipped to them. Now, to return the product, it must be shipped back to the retailer, likely their distribution system, which adds many different stops to the process.

There are two different paths that need to be considered during an online return. The first is the information path. The information system is important to the overall flow of the return process. The first task is for the customer to notify the online retailer that they wish to return the product. At that time, the retailer must determine what will happen next, does the customer want a refund or a replacement. If it is determined that the customer wants a replacement, then the retailer must notify the distribution center and likely the manufacturer. The reason for notifying the distribution center is so that the replacement can be shipped. The reason to notify the manufacturer is so that they can plan their production accordingly. Once the distribution ships the replacement, it can be received by the customer. Figure. 2 outlines the process.

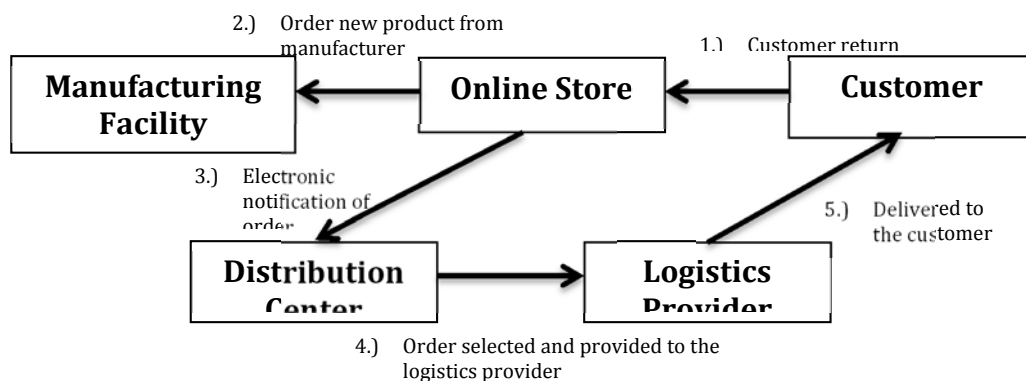


Figure. 2



The physical movement of the material is a second side to return path. The actual product to be returned must be gathered at the customer's location, returned to the distribution center, reviewed, and then a decision needs to be made on the product as to whether it needs to be discarded, refurbished, recycled, or remanufactured. Once this is complete, then the distribution center must again move the product to the designated location. This process is outline in the Figure. 3.

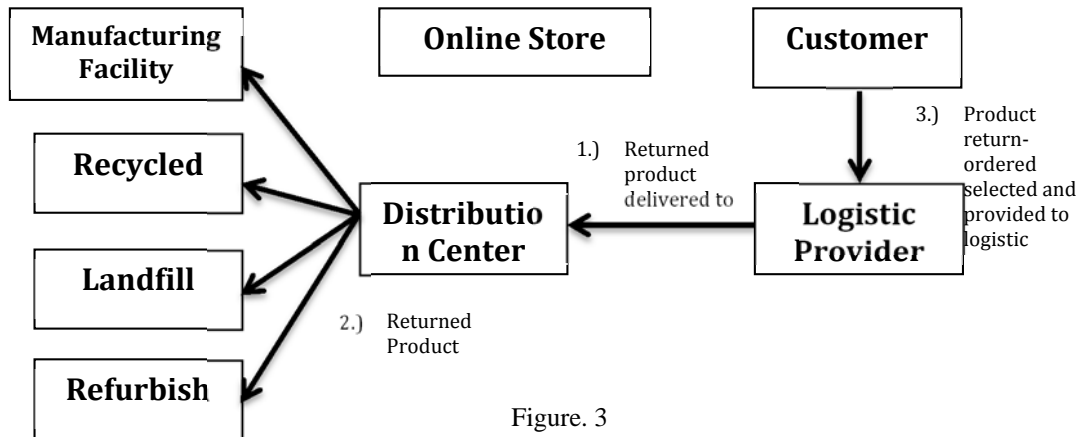


Figure. 3

Now, as it seems that lenient return policies are A must for online competition, dealing with returns may be an action that could be outsourced to another organization. Focusing on core competencies can allow organizations to improve, therefore, if RL is not a core competency for many organizations, it stands to reason that a third party that deals exclusively with returns would be a value to some organizations. Chawla (2007) makes the argument that a return center can be setup separately from the normal distribution center to deal solely with returns. A central return center can provide better visibility of inventory, cut return time, and allow the central return center to capitalize on economies of scale to reduce cost (Chawla, 2007).

The movement of a third part dedicated solely to the return of products may have merit and may operate as in the Figure. 4.

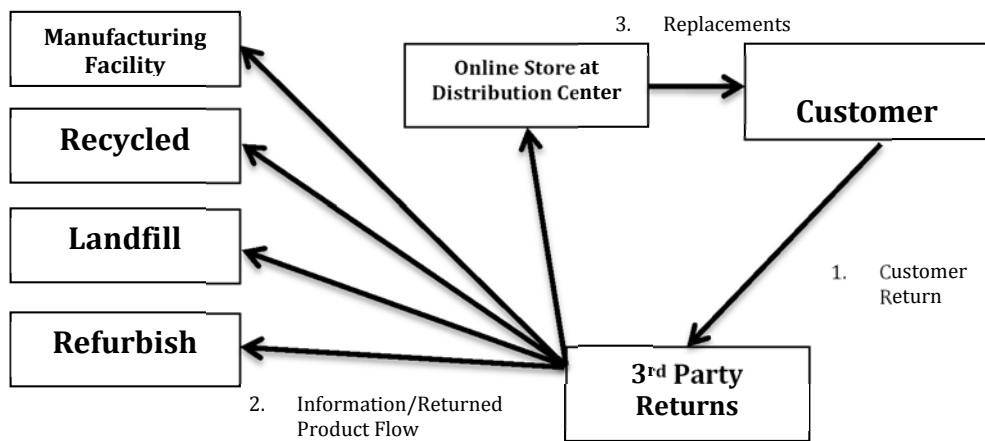


Figure. 4

In this situation, the retailer is not concerned with the return until it is taken care of by the 3rd party. Also, in this proposed model, the material and information flow follow the same path eliminating two different paths of information and material flow, which should lead to streamlining the process making it more efficient. This does not reduce the importance of information systems on returns, but it places that responsibility on the third party, which should be their core competency.

## 7. Conclusion and Future Research

This paper has shown that reverse logistics has changed dramatically from when a customer physically purchased a product at a brick and mortar store to today's environment where a product can be purchased online and returned without the customer ever having to step foot outside of their own home. It has accomplished this through an explanation of the evolution of reverse logistics, the importance and significance of reverse logistics, the issues and cost of reverse logistics, the role of information systems in reverse logistics, and the future of reverse logistics.

From this article, there are many areas for future research. The first may be the generational expectations of future online shoppers. Is it that future online shoppers expect to have very lenient return policies? If future online shoppers demand lenient return policies, will that cost be recouped via an efficient RL system or will the selling price have to be

changed to cover the cost? These questions should be researched further.

Further research on the feasibility of third party RL providers is certainly an area that warrants research. Because of the previously discussed rapid growth of third party logistics organizations, there may be value in the use of a third party to deal with returns. To accomplish this type of feasibility study, the hidden and actual costs of reverse logistics should be studied further. Determining the actual cost of reverse logistics is an area that warrants future research. There are many ideas of what the cost of reverse logistics are, but both cross sectional and longitudinal studies would be useful in gaining a better understanding of what the costs of reverse logistics are and where those cost originate.

Reverse logistics is an area of logistics and business in general that is only going to gain in momentum as the growth of online shopping continues. There needs to be a better understanding of three things. The first is to further determine the importance of a lenient return policy and how that affects the price of the product. The second is to better understand the cost of returning a product. Finally, the third is to continue to investigate the feasibility of a third party dedicated solely to dealing with returns.

This article has attempted to open the discussion of reverse logistics in the framework of the evolution of reverse logistics in hopes that it may provide insight into the future of reverse logistics. Reverse logistics may very well become a cost of doing business, and if so, it is a relevant area for both practitioners and academics to explore.

## **8. References**

3PL Market Analysis 2013. (n.d.). *3PL Market Analysis 2013*. Retrieved February 10, 2014, from [http://www.3plogistics.com/PR\\_3PL\\_Financial-2013.htm](http://www.3plogistics.com/PR_3PL_Financial-2013.htm)

Adler, E. (2013). Tablets Are Becoming More Important Than Smartphones For Online Shopping, But Retailers Aren't Ready, *Business Insider*.

Bechwati, N., & Wendy S. (2005). The Impact Of The Prechoice Process On Product Returns. *Journal of Marketing Research*, 42(3), 358-367.

Blanchard, D. (2007). Supply Chains Also Work in Reverse. *Industry Week*.

Bower, A. B., & Maxham, J. G. (2012). Return Shipping Policies of Online Retailers: Normative Assumptions and the Long-Term Consequences of Fee and Free Returns. *Journal of Marketing*, 76, 110-124.

Chan, T. S., Chan, H. K. & Jain, V. (2012). A framework of reverse logistics for the automobile industry. *International Journal of Production Research*, 50(5), 1318-1331.

Chawla, S. (2007). Two steps forward, one step back... Reverse logistics management; Turning the misery of product returns into a strategic differentiator in multi-channel commerce. Infosys. Retrieved January 28, 2014 from: <http://www.infosys.com/industries/retail/white-papers/Documents/reverse-logistics-management.pdf>

Chu, W., Eitan G. & James D. Hess (1998), Managing Dissatisfaction: How to Decrease Customer Opportunism by Partial Refunds. *Journal of Service Research*, 1 (November), 140-55.

Davis, S., Hagerty, M. & Gerstner, E. (1998). Return Policies and the Optimal Level of "Hassle". *Journal of Economics and Business*, 50, 445-460.

Douthit, Davide, Flach, Michael & Agarwal. (2012). A "Returning Problem" Reducing the Quantity and Cost of Product Returns in Consumer Electronics, Accenture.

Ford's Troubled Firestone Tires Are Headed for a Football Field. (2002, March 9). The New York Times. Retrieved January 27, 2014, from <http://www.nytimes.com/2002/03/09/business/ford-s-troubled-firestone-tires-are-headed-for-a-football-field.html>.

Hsiao, L. & Ting-Ju C. (2011). Returns Policy and Quality Risk in E-Business, *Production and Operations Management*, 489-503.

Langlery, John (2014). The State of Logistics Outsourcing, Results and Findings of the 18th Annual Study, 2014 Third Party Logistics Study.

- Market Line (2013). Online Retail Industry Profile: Global.
- Market Line (2013). Online Retail Industry Profile: United States.
- Michelin recalls 1.2 million tires in U.S. (n.d.). Automotive News. Retrieved January 27, 2014, from <http://www.autonews.com/article/20131214/RETAIL05/131219907/michelin-recalls-1.2-million-tires-in-u.s>.
- National Retail Federation (2012), Return Fraud Survey.
- Nielson Report (2012), How Digital Influences How we Shop Around the World.
- Padmanabhan, V. & I. P. L. Png. (2004). Ready to Do Returns Policies Intensify Retail Competition. *Marketing Science*, 23(4), 614-618.
- Petersen, Andrew J. & Kumar. V. (2009). Are Product Returns A Necessary Evil? Antecedents and Consequences. *Journal of Marketing*, 73(3), 35-51.
- Pinkerton, I. (1997). Getting religion about returns. *Dealerscope Consumer Electronics Marketplace*, 39(11), 19-20.
- Reece, J. & Norman, L. (n.d.). The Six Hidden Costs of Reverse Logistics. - Inbound Logistics. Retrieved January 28, 2014, from <http://www.inboundlogistics.com/cms/article/the-six-hidden-costs-of-reverse-logistics/>
- Rogers, D. S. & Tibben-Lembke, R. S. (1999). Going backwards: Reverse Logistics trends and practices. Reverse Logistics Executive Council, Pittsburgh, P.A.
- Rust, R. T., Zahorik, A. & Keiningham, T. L. (1996). Service Marketing.
- Sharif, A. M., Irani, Z., Love, P. E. & Kamal, M. M. (2012). Evaluating reverse third-party logistics operations using a semi-fuzzy approach. *International Journal of Production Research*, 50(9), 2515-2532.
- Trager, I. (2000). Not so many happy returns. *Interactive Week*, 7 (11), 44-45.

United States Census Bureau (2012), Annual Retail Trade Survey.

Walden, J. (May 30, 2005) Reverse Logistics: Important or Irritant? Retrieved January 27, 2014, from [http://www.honeycombconnect.com/Supply\\_Chain\\_Management/document\\_5567.ashx?page=Supply\\_Chain\\_Management\\_home&datasource=427](http://www.honeycombconnect.com/Supply_Chain_Management/document_5567.ashx?page=Supply_Chain_Management_home&datasource=427).

Wood, Stacy L. (2001). Remote Purchase Environments: The Influence of Return Policy Leniency on Two-Stage Decision Processes. *Journal of Marketing Research*, 38 (May), 157-169.

Wright, Ashleigh, (January 3, 2013). Royal Mail: Online retailers hope to improve delivery and returns in 2013 from <http://motortransport.co.uk/blog/2013/01/03/royal-mail-online-retailers-hope-to-improve-delivery-and-returns-in-2013/>.

Vahabzadeh, A. H. & Yusuff, R. B. M. (2012). Greening your reverse logistics. *Industrial Engineer*. December, 35-39.

Zickuhr, K. Tablet Ownership, (June, 2013). <http://www.pewresearch.org>.

Zickuhr, K. & Smith, A. Digital differences, (April, 2012). <http://www.pewresearch.org>.

Zickuhr, K. & Rainie, L. (January, 2014). E-Reading Rises as Device Ownership Jumps, <http://www.pewresearch.org>