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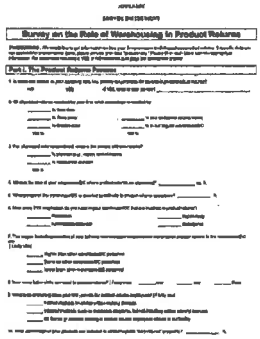

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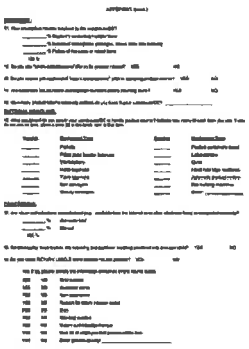

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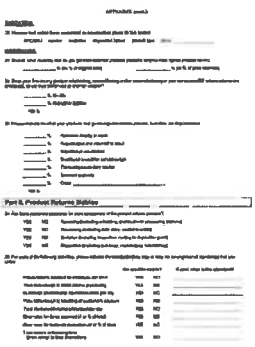

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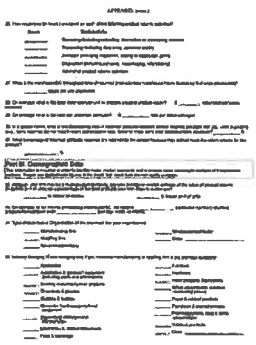

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In sum, we posit that good product returns processing can result in improvements in profitability through cost reductions and higher product recovery rates. It can also mean higher customer service levels as products being returned are credited to customers sooner and more accurately (with fewer discrepancies). Organizations with excellent product returns processing capabilities (defined as those having processes that are both efficient and effective) can have a potential competitive advantage, which gets larger as the magnitude of product returns increases. Through higher recovery rates of returned products and lower costs resulting from more efficient returns processing, the "excellent" firms are able to maximize revenues and minimize costs, thus contributing more to the firm's bottom line.

As much of the literature on product returns has pointed out, many firms still do not place adequate emphasis on the product returns process. They handle the product returns they receive, but they typically take longer to process. Actual processing costs are higher and discrepancies and reconciliations are greater, and cause more customer dissatisfaction. These firms are more likely to have part-time management personnel responsible for product returns processing which is unlikely to provide the necessary oversight of the process to ensure optimal efficiency and effectiveness.

Of course, the best way of optimizing the product returns process is to not have returns at all - referred to as returns avoidance. Return avoidance policies aimed at minimizing product returns are becoming popular. These strategies use customer education programs that focus on training the customer in the proper operation and use of the product. This is critical since about 50 % of the product returns in consumer electronics are not due to product defect, but due to customer difficulty in properly operating the product (Rogers et al. 2002). Retailer emphasis on training customers in the proper use of their products can help in improving customer relations as well as decreasing costs of product returns. Retailers can help a great deal by initial sorting and by making decisions on processing versus returning to manufacturer. This could reduce the uncertainty in the timing and quality of returns that has been blamed for the unpredictability of reconditioning and refurbishing returned products (Guide and Van Wassenhove 2002). The use of various return programs in retail stores that either encourage or discourage customers from returning products are also important. The store policies on returns can have significant impact on the volume and type of products being returned.

FUTURE RESEARCH

While the survey results revealed that firms are using metrics to measure and evaluate the product returns process, much more needs to be done. Future research needs to be directed at establishing the specific criteria that could be used to evaluate existing product returns metrics and to classify existing metrics from a process, rather than functional, perspective (Caplice and Sheffi 1994). The metrics evaluated in this research study were identified in the literature and by persons interviewed in the on-site visits, but that does not necessarily mean that they are the correct metrics that should be used. Future research should evaluate these metrics using the eight evaluative criteria namely, validity, robustness, usefulness, integration, economy, compatibility, level of detail, behavioral soundness identified by Caplice and Sheffi (1994). This does not suggest that existing metrics being used are insufficient, but the metrics were likely not developed with the eight criteria in mind and therefore may, or may not, be the right measures.

Additional research on the standards being employed by companies processing product returns based on the metrics selected could potentially reap significant rewards for companies. Historically, published standards have not been researched by scholars, often because that information is proprietary. While proprietary issues are important, data can be masked and the identification of key standards does not necessarily "give away" trade secrets or competitive advantage. It is one thing to know what standards are being used by industry leaders; it is quite another to have the right systems, policies and procedures in place and to implement these standards effectively and efficiently. Such data will have to be obtained using qualitative research methods such as case studies. Companies will typically not be willing to share such information in research that utilizes survey methods.

Additionally, more research utilizing hypotheses testing could be conducted. As indicated in the introduction to this paper, many published studies, especially those in the trade or professional press, present anecdotal information. While such information can be useful in aiding companies in pursuing better policies, procedures and programs, they do not add a great deal to the "body of knowledge" relating to product returns specifically, and reverse logistics generally. Specific research is needed on many aspects of product returns including such issues as cost recovery in product returns disposition, optimal layouts of warehouses/DCs when both forward and reverse logistics operations are carried out in the same facility, acceptable return rates for various industries, companies and products, and examination of the best methods of training and development of product returns employees.

While product returns processing is becoming more important, it is also vital that issues relating to eliminating product returns be examined. For example, the return policies of retail stores impact whether or not customers return items. Stock rotation and replenishment policies impact the number of items returned to vendors for credits as well as product disposed of at the retail location. In the electronics industry, with some products being returned fraudulently, research into the costs and benefits to retailers performing on-site inspections of returns could be evaluated. Finally, the product returns process, which has been modeled descriptively by Stock (2004) and others, could be more rigorously tested, with detailed flow charts of each stage of the process being developed. Stock (2004) presented flow charts modeling each component of the five-stage process he identified, but these were only examples used by companies in various industries. While they provide guidance to firms and researchers examining product returns processing, generic process maps or flow charts need to be developed. This would provide a basis for developing optimal product returns processing systems.

In sum, product returns will continue to be a part of business operations. In some fashion all members of the supply chain are involved in the process. With increasing competition and higher customer demands, it is important that all facets of the supply chain operate at peak efficiency and effectiveness. As a part of the process, products returns are no exception.

Sidebar

Few research studies have published specific empirical data regarding the reverse logistics practices of companies. This multi-stage study employed interviews, site visits, and a mail survey to collect responses from 230 members of the Warehousing Education and Research Council (WERC) regarding their reverse logistics practices. Results suggest that in spite of the growing importance of reverse logistics, few executives have product return processing as their primary responsibility and often undertake this activity along with other job responsibilities. Most firms handle the product returns process themselves and typically within the same facilities that handle forward logistics. Returning items directly to stock, repackaging and returning to stock, and selling as scrap, were the three top disposition options employed by firms. Results indicate that, contrary to general understanding, the majority of retailers and wholesalers reported a recovery rate of over 75% of product cost. Several hypotheses developed from the published literature on reverse logistics were tested. In many instances, these hypotheses were formulated on anecdotal information or single case studies and had not been empirically tested prior to this research being conducted.

Key Words: Manufacturers; Product returns; Retailers; Reverse logistics; Wholesalers/Distributors

Footnote

1 Material presented in this section are based exclusively on the mail survey, company interviews and on-site visits, and/or previously published research that was cited earlier in the paper.

Footnote

NOTES

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1. returned directly to inventory

2. repackaged and returned to inventory

3. repaired or refurbished

4. destroyed or sold as scrap

5. turned over to a third-party/secondary market

6. donated to charity

Often, product disposition is handled in multiple ways as opposed to a single approach. As shown in Table 1, responses suggest that 88.3 % of them send a portion of their products directly to inventory, 81.8 % destroy or sell portions as scrap, 61.4 % repackage items and return some portion to inventory, 4.1 % refurbish, and 37 % indicate they donate some product returns to charity. This indicates that the returning to stock either directly or by repackaging and selling as scrap are the two major disposition methods. The survey did not specifically examine what recovery percentage was obtained from each disposition option nor was data collected regarding the actual amounts of returned products placed back into inventory, and these questions will have to be answered with additional future research. For example, even though a large percentage of survey respondents (88.3 %) return items directly to inventory, we do not know how many products that represents. It is also possible that a product category or SKU is returned to inventory, but only a small percentage of all of the products or SKU's received.

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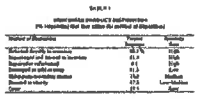

TABLE 1PROCESSED PRODUCT DISPOSITION(% responding that they utilize the method of disposition)

Existence of Published Standards

Respondents were asked about the existence of published standards for each step of the product returns process. For the receiving activity, manufacturers and retailers indicated that they used standards about one-half of the time. Wholesalers/distributors did not use standards for receiving as often (42 % of the time). In the processing activity, results were similar. Manufacturers and retailers utilized standards about two-thirds of the time, while wholesalers/distributors used them about one-half of the time. For sortation, only retailers used standards frequently (64 % of the time), while manufacturers and wholesalers/distributors employed standards 46 % and 39 % respectively. Finally, for disposition, all respondent categories utilized standards about one-half of the time. However, these differences among the components of the product return process were not statistically significant.

With reverse logistics and product returns programs still not fully developed in some firms, it was not surprising that a larger number of companies did not have standards in the product return process. On the other hand, a reasonable number had standards, so there is progress taking place regarding firm's awareness that reverse logistics is an important aspect of the business. As more firms place additional emphasis on managing product returns more effectively and efficiently, the use of standards will no doubt increase.

Type of Standards Used

Respondents were asked to indicate the type of standards used by them for the eight activities commonly used by firms in evaluating product returns processing efficiency and effectiveness (see Table 2). Responses suggested that a majority of the respondents in all three business groups did not use standards for these activities. When the business groups did use standards, the extent of the use of standards varied. This reflects the general condition relative to the use of standards and metrics within many companies and industries and has been identified as an area of "need" in supply chain performance standards.

For example, the Council of Supply Chain Management Professionals has published a series of Supply Chain Management Process Standards that includes the returns process. Supply Chain Visions, the author of the series, identified five process areas where standards were required: (1) Receiving and warehousing; (2) Transport; (3) Repair and Refurbishment; (4) Communicate; and (5) Manage Customer Expectations. They also identified typical best-practice processes. To illustrate, as part of receiving and warehousing, the sub-process of "systems integration" was identified. A suggested minimum process standard was the following: Order management and returns processes are integrated using common systems to captare orders, shipments, and return authorizations/information. The authors identified the following as a best practice: Returns are matched against original orders by item and quantity (Supply Chain Visions 2004).

Table 2 shows the percent of respondents in each group indicating that they use standards for the above eight activities. It appears that use of standards seems to be higher for activities 1, 3, 4 and 6 for retailers and 1-3, 6, and 7 for wholesalers. Part of the reason for this is that retailers and wholesalers/distributors are positioned closer to the final customer and are expected to be more responsive to customer returns. Thus, they would be more likely to have standards for product returns processing. The results in Table 2 indicate that a higher percent of retailers use standards for pieces/returns handled by employee per hour (activity 1) compared to wholesalers and manufacturers.

A higher number of retailers also used standards for total pieces/returns processed per day and error rates for items scanned (activity 3 & 4). A higher percent of wholesalers used standards for time from receipt to crediting customer's account (activity 2) as well as for assessing total returns processing time (activity 6). There were no significant differences in the respondents regarding the use of standards for time to receipt to initial returns processing (activity 7) step and for assessing the number of pieces returned to stock per day (activity 8). Almost none of the manufacturers used standards for assessing error rates for items scanned (activity 4), perhaps assuming that such errors would be minimal since all of the returns they receive should be theirs and not some other manufacturers.

In general, successful management of reverse logistics/product returns requires the use of productivity, utilization and performance metrics. For each category, the following definitions are offered (A. T. Kearney 1991).

Productivity = Output produced ÷ Input consumed

Utilization = Capacity or resources used ÷ Capacity or resources available

Performance = Actual output produced ÷ Standard output produced

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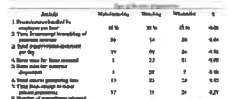

TABLE 2USE OF STANDARDS IN THE PRODUCT RETURN PROCESS(% responding that they utilize standards)

Table 3 identifies some selected metrics used by companies to more efficiently and effectively manage the reverse logistics/product returns process. The metrics should be useful for companies seeking to measure and evaluate various aspects of their product returns/reverse logistics process. Not every metric will be useful for every firm but they do provide a good starting point for companies.

Section II: Results of Hypotheses Testing

A total often (10) hypotheses were tested for this study using survey responses from 230 respondents. Results showed support for all of the hypotheses ($\alpha<0.05$) except for H^sub 2^, H^sub 3^ and H^sub 7^. H^sub 1^ was supported as the results show that return processing was generally assigned to middle or senior management positions in the organization. As shown in Table 4, out of the 230 total responses, 208 (90 %) held managerial or higher positions. On a percentage basis, 47 % (108/230) of the respondents were managers followed by directors (60/230 = 26 %) and corporate officers (40/230 = 17 %). Chi-square (?2) was 11.02, degrees of freedom (df) = 3, and p = 0.00. An analysis of the three combinations of business organizations (mfg.-retail; mfg.-wholesale; retail-wholesale) revealed that only the manufacturers and retailers were significantly different statistically (p = .02). Retailers were much more likely than manufacturers to have more senior management personnel responsible for reverse logistics.

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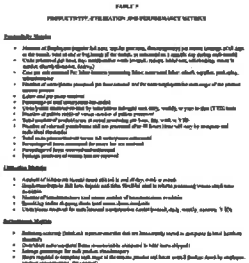

TABLE 3PRODUCTIVITY, UTILIZATION AND PERFORMANCE METRICS

Hypotheses H^sub 2^ which stated that majority of manufacturing, retailing or wholesale/distributor firms are likely to have a single person who is responsible for product returns processing was not supported. Results show that except for retailer sector, product handling was a multiple person responsibility. As shown in Table 5, 65 % (58/89) of manufacturers and 55 % (63/114) of wholesalers indicated that product handling was a multiple person responsibility while 65 % (15/23) of the retailers indicated it was a single person responsibility. Chi-square (χ^{sup} 2^) was 7.2, degrees of freedom (df) = 2, and p = 0.03. An analysis of the three combinations of business organizations (mfg.-retail; mfg.-wholesale; retail-wholesale) revealed that only the manufacturers and retailers were significantly different statistically (p = .02). Retailers typically had a single person responsible for product handling, while manufacturers had several people responsible.

H^sub 3^ was also not supported as results showed that majority of the firms have reverse logistics/product return function done in-house. About 75 % (72/97) of the respondents who had indicated single person responsibility for reverse logistics conduct product returns in-house. A majority of the respondents indicated in-house processing irrespective of whether a single or multiple persons were responsible for reverse logistics/product return functions. In fact, manufacturers' utilized 3-PL's only 25 % of the time, retailers only 18 % of the time, and wholesalers/distributors only 12 % of the time. The differences were not statistically significant, but it does show that most companies still perform product returns processing in-house.

Further analysis showed that a small portion of the respondents indicated reverse logistics as their primary responsibility. Table 7 shows the breakdown for primary job responsibility. It appears that in spite of the growing importance of reverse product flows, few executives (6/227 = 2.6 %) in the industry have reverse logistics as their primary job responsibility. On the other hand, about 50 % (116/227) of all the respondents indicated that their primary job responsibility was Warehouse Operations and Management followed by General Management (50/227 = 22 %) and Logistics Planning (49/227 = 22 %). Thus, more often, the reverse logistics function is assigned as a part of some other organizational function such as Warehouse Operations, General Management or Logistics Planning. Chi-square (χ^{sup} 2^) was 12.55, degrees of freedom (df) = 4, and p = 0.02.

An analysis of the three combinations of business organizations (mfg.-retail; mfg.-wholesale; retail-wholesale) revealed that manufacturers and wholesalers and retailers were significantly different statistically (p = .02). Wholesalers were significantly different than both manufacturers and retailers, in that they were much more likely to have general management responsible for reverse logistics activities. Wholesalers often have to balance the conflicting demands of manufacturers to overstock versus retailer's concern about finite selling seasons and uncertain demand (Tsay 2001). They also may have to consolidate returns from multiple retailers for economic processing of returned products. This would require that this function be handled by employees with good management skills.

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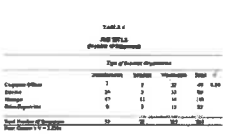

TABLE 4JOB TITLE(Number of Responses)

In view of the above, handling of product returns is likely to be a multiple person responsibility in most organizations. These findings would support the conclusion that product returns processing is managed usually on a part-time basis by more than one employee in combination with other forward logistics activities. In addition, the study results show that over 80 % of the three business groups reported that they had less than five full time employees under managerial, administrative and supervisory category. H4 stated that only a minority of firms use formal methods of training. Results support the hypothesis. Only 89 out of 228 (39 %) respondents indicated they had a formal method involving written training methods.

Recovery rate was defined as the monetary value recovered from the item being returned as a percentage of original cost after processing the returned product item. Overall results indicate a high rate of recovery. More than one-half of all the respondents (97/184) indicated that product recovery rate as a percentage of original cost was above 75 %. For this analysis, recovery rates as percent of costs were divided into four quartiles: small, medium, large and very large. Recovery rate was termed as "very large"

De Koster, de Brito, and Van de Vendel (2001) outlined me factors that contributed to combining or separating inbound and outbound flows during the handling of product returns for food stores, department stores, and mail order companies. Their findings suggested that retailers were not as good in performing reverse logistics compared to their ability in handling forward flows.

Richey, Genchev, and Daugherty (2005) examined automobile after-market firms and showed that reverse logistics program efficiency and effectiveness could be increased by innovation and properly allocating resources. Tan and Kumar (2006) compared the economics of refurbished parts versus part replacements for the computer industry. The findings of their study stated that delay in transportation associated with processing returns negatively impacts the economic viability of reverse logistics. Wu and Cheng (2006) looked at the supply chains in China, Taiwan and Hong Kong to identify problems and developed a common model of reverse logistics for the industries and companies examined. Their research led them to suggest that processing of product returns was not economically viable due to lower values of recovered products since the cost of recovery exceeded the recovered value.

Mukhopadhyay and Setoputro (2004) examined reverse logistics in an e-business context, specifically looking at pricing and return policies of Internet businesses. This study linked the e-tailer return policy to customer sensitivity to the rate of return parameter. Findings of this study suggested that sellers' return policies were more restrictive if customers were sensitive to the rate of return parameter and were more likely to abuse the seller's return policies. The same authors (Mukhopadhyay and Setoputro 2006) examined me role of 4-PL's in the outsourcing of reverse logistics activities and identified situations where optimal "win-win" results could be obtained by all parties.

While each of the research studies examined a variety of reverse logistics issues, they were all in agreement that more empirical research needed to be done on the topic. As evidenced in the overview of logistics and supply chain management doctoral dissertations (Stock and Broadus 2006), more researchers have begun to examine reverse logistics/product returns. The authors identified 13 dissertations completed between 1999 and 2004 dealing with some aspect of reverse logistics/product returns. While 13 dissertations is not a large number, the number of dissertations increased twofold from the 6 dissertations published on the subject between 1992 and 1998. Only 12 were published in the twenty years between 1970 and 1991 in the U.S. As a result of the continuing calls for more empirical research on reverse logistics and product returns, this present research study was initiated to examine what reverse logistics activities were being undertaken within three major industry sectors-manufacturing, wholesaler/distributor, and retailing-and to identify some benchmarks for evaluating company practices. The focus of this research was only on product returns and not packaging materials or waste disposal.

HYPOTHESES

Until recently, the majority of published articles on reverse logistics and product returns provided anecdotal evidence of the rising importance of these issues. While the assertions and recommendations were intuitively appealing and straightforward, most research studies have not specifically developed and tested hypotheses related to product returns processing. While this research was primarily descriptive in nature, some of the previously published literature suggested that certain hypotheses could be developed and tested. In those instances, this research study examined several previously untested hypotheses and they are discussed in the following paragraphs.

Academics and practitioners agree that there is a growing focus on reverse logistics and product returns as firms are beginning to take a strategic perspective of the process (Wu and Cheng 2006). Managers state that a well administered reverse logistics program can reduce costs, improve customer service, and project an environmentally friendly image, thus providing the firm with a competitive edge in the current market (Rogers et al. 2002; Srivastava and Srivastava 2006). Stockholders, on their part, place a lot of emphasis on effective reverse logistics and product returns partly prompted by the need to comply with legislative and legal obligations (Alvarez-Gil et al. 2007). The increased strategic importance and the realization of the competitive edge offered by effectively managed reverse logistics processes should make product returns a critical function.

One issue that has not yet been resolved is that of whether organizations should establish separate supply chain channels for forward and reverse logistics. Rogers and Tibben-Lembke (2001) stated: "for returns to be proceeded effectively and efficiently, they should usually be separated from the forward channel" (p. 141). Chopra and Meindl (2007) argued that because customer priorities and supply chain strategy for the distribution of products are different than for product returns, different supply chains should be established. Speh (2007) also seemed to infer that multiple supply chains are needed to handle forward versus reverse logistics when he stated: "reversing the flow of product in the supply chain... is a valuable service because reverse processes are outside the normal supply chain process and often require significant time and attention" (pp. 235-236). Finally, Wisner, Leong, and Tan (2005) seemed to take the view that reverse logistics could be accomplished in the same supply chain as forward logistics when they stated: "Extending integration can also include reverse logistics, or integrating the process of product returns back up the supply chain" (p. 458). The authors then went on to suggest that a separate reverse logistics channel could be established: "Competitive pressures, increased legislation, and the desire to better utilize resources are forcing many firms to design an effective reverse flow system" (p. 458).

None of these authors cited any specific research to support their positions, so it is possible that reverse logistics could be accomplished in the same or different supply chain channels, although most authors appear to support separate channels being established. Irrespective of whether an organization utilizes the same or different supply chains however, there is general agreement that some specific person, group or department should be directly responsible for reverse logistics.

Relating to the notion that a specific person should be directly responsible for reverse logistics, Stock, Speh, and Shear (2002) recommended that if the firm intends to make a profit on the product returns activity, then this responsibility should be assigned to senior managers with good business acumen. Many of the firms surveyed in this research believed that the effectiveness of reverse logistics could be improved by making it a separate function in the organization instead of having it attached to the forward distribution network (Rogers and Tibben-Lembke 2001). Based on these previously published articles, the following hypothesis is presented:

H^sub 1^: Product returns are primarily handled by a management-level person in manufacturing, retailing or wholesale/distributor firms.

Utilizing articles authored by House (1971) and Autry (2005), elevating reverse logistics and product return as a separate function at a management level would imply that reverse logistics and product returns processing should enjoy a similar status as that of forward distribution. Having reverse logistics as a separate function would also reduce or eliminate its subordinate status to forward distribution, thus minimizing chances of multiple reporting and role conflicts.

In organizations, managers are tasked with providing structure and specific directions in allocating tasks, establishing procedures, setting expectations and rewards, thus reducing ambiguity and conflicts regarding functions and goals (House 1971). Organizational behavior theories suggest that growth in organizations results in greater differentiation in structure (Blau 1970). When faced with handling (i.e., processing) multiple functions and different specialties, managers realize that they end up spending more time supervising these functions compared to managing a homogenous function (Blau and Schoenherr 1971). Research also indicates that formalization of rules, processes and procedures to guide operations increase efficiency (Autry 2005). Sub-division of responsibilities and creating a functional group is likely to improve performance (Blau 1970). Studies propose that functional differentiation and professionalization are known to infuse commitment to move beyond the current status towards greater acceptance of technological innovations and provide motivation to be recognized within the organization (Damanpour 1987). Having executives higher in the organizational hierarchy provides weight or importance to the function as these executives can act as champions for improvements and improve communication and coordination throughout the firm (Sinha and Van de Ven 2005). This would suggest that as the importance of the product return function increases, this function would require management by a senior executive in the firm. Based on this, the following hypothesis is presented:

H^sub 2^: A majority of manufacturing, retailing or wholesale/distributor firms are likely to have a single person responsible for product returns processing.

Meade and Sakris (2002) found that selection of third-party options are often guided by a firm's strategic performance requirements. Businesses recognize the need to focus on core competencies and view third-party sources as a logical choice for handling reverse logistics activities in the absence of a separate function within the organization for product returns. Researchers also believe that firms should give serious consideration to third-party processing, if the current product return function is a part-time operation handled by more than one employee along with other functions (Stock, Speh, and Shear 2006). This is because third-parties with reverse logistics as a core competency have efficiencies of operation and are able to combine volumes from multiple companies for economies of scale (UK Department of Transport 2004). In addition, third-parties specializing in product returns have unique channels for product disposition in addition to providing a single central place for potential buyers of returned goods due to the large volumes they process (Rogers and Tibben-Lembke 2001). Thus, outsourcing is a viable option for firms without a dedicated returns process and for those that are unable to realize costs savings due to lower volumes of product returns (Discount Store News 1999; Gorick 2005). Based on these articles, the following hypothesis is presented:

H^sub 3^: When reverse logistics or product returns is not a single person responsibility, the product returns function is most often outsourced to third-parties.

Another reverse logistics matter that has been examined by a number of writers has been the education and training of employees. Trade reports indicate that product returns may cost as much as three to four times the cost of outbound shipments (Andel and Aichlmayr 2002). Return product handling costs can be as high as $35-$42 billion per year or about 3-4 % of the $1.1 trillion 2005 logistics costs (Cooke 2006). This implies that there is an urgent need to improve the product return process to make it more effective and thus enhance competitiveness in the marketplace (Rogers and Tibben-Lembke 2001; Stuart et al. 2005). As the profile and visibility of reverse logistics rises in the organization, processes and strategies for reverse logistics are also attracting greater interest and scrutiny (Rao, Stenger, and Wu 1994). In addition, since the returned product goes through various stages in the process, potentials for errors increase. To counter this, experts have recommended better training of employees in the product returns process as part of best practice (Stock 1996). Industry reports suggest that this training can be both formal and informal and can range from overseeing how returns are processed to teaching how to repackage items (Kuzeljevich 2004). Current training methods involve providing employees with operating procedures manuals, mentoring of workers by other more experienced employees, or more informal methods (Stock, Speh, and Shear 2006). Thus most of the training could be on-the-job training and may consist of looking over employee's shoulders. Based on mese published articles, the following hypothesis is presented:

H^sub 4^: A minority (less than 50%) of firms use formal methods involving written materials, Internet, etc. to train employees involved in product returns processing.

Firms are motivated to recover as much value as possible from returned products. However, there is not enough published information about the recovered values of returned products in relation to the costs incurred in processing them. In fact, Wu and Cheng (2006) suggested that publishers are better off discarding the returns rather man processing them. Further, it is also believed that if the returned products remain longer in reverse channels, they can negatively impact profitability. This could be due to higher inventory levels, transportation and warehousing costs, as well as deterioration and product obsolescence with the passage of time (Blackburn et al. 2004; Stock 2001). On the other hand, if returned products are processed at points closer to the customer, the time lag is shorter as products avoid traveling up the distribution channel to the manufacturer and then back down to the wholesaler and retailer. Quicker processing and turn-around help recover greater value from the returned products (Rogers and Tibben-Lembke 2001). In view of this, it is likely that retailers who are closest to the consumer in the distribution chain should be able to get higher product recovery rates compared to wholesalers/distributors or manufacturers. Based on these articles, the following hypothesis is presented:

H^sub 5^: Recovery rates (as % of cost) are higher for retailers when compared to manufacturers or wholesalers/distributors.

Multiple authors have indicated that firms often utilize return authorizations (RA's) for accepting returns. Much of the published information on the use of RA's has been anecdotal, mat is, viewpoints of practitioners working in the field of product returns, qualitative interviews of reverse logistics practitioners, and case studies of companies involved in various aspects of product returns processing (Guide and Van Wassenhove 2002; Mukhopadhyay and Setoputro 2004; Richey et al. 2005; Rogers and Tibben-Lembke 2001; Stock 1998, 2004). While the benefits of RA's seem apparent, there have not been any published studies that specifically demonstrate that a majority of firms utilize these documents as a means of processing product returns. In this research study, this specific issue is addressed, leading to the following hypothesis:

H^sub 6^: A majority of firms (more than 50%) use return authorizations (RA's) for accepting product returns.

Product disposition refers to the different ways business organizations try to recover the costs of the products that were returned. The following examples illustrate the multiple ways that returned items are processed. For items with product dating that are nearing their expiration dates, they can be maintained in temporary storage and picked and shipped to customers first. Thus, they are not "mixed" with other items with longer expiration dates (Stock 2004). If the products being returned are in damaged boxes, yet are in otherwise perfect condition, repackaging of the items can take place immediately if packaging supplies are maintained at the returns processing facility. While this is not a common occurrence, some computer and electronic components are processed in this way, resulting in the items being returned to inventory much more quickly (Stock 2004).

Another example in the electronic components industry occurs when returned items may only have small cosmetic imperfections that do not impact usability, or they may have a defective part that has been replaced and are now in working order, but not in "as new" condition. These items can be used as warranty replacements and/or resold with appropriate indication that they are not "brand new."

As per industry sources, often the returned items are in fact not defective but have entered the return stream because the customers changed their mind or did not understand how to operate the product (Rogers and Tibben-Lembke 2001). A recent study reported that retailers most often send back the non-defective customer returns to the manufacturers without even testing them. This results in manufacturers returning these non-defective items directly back-to-stock or into inventory after a cursory examination (Rogers and Tibben-Lembke 2001). Stuthes indicate that between 17-20% of the product returns went directly back-to-stock to be sold as new (Blackburn et al. 2004; Rogers and Tibben-Lembke 2001). Based on these published articles, the following hypotheses are presented: