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The customer consequences of returns in online retailing: An empirical analysis

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ABSTRACT

Pressure continues to build on the operations management function to facilitate system and firm level benefits. In the online marketplace, one area of growing interest is that of product returns. Though commonly viewed as a cost center from an operations perspective, operations' actions have the potential to strongly influence future customer buying behavior in several ways. Using an archival database of actual purchase and returns history provided by a moderately sized online retailer, this study examines the relationship between a customer's experience of product returns, and subsequent shopping behavior. Employing transaction cost, consumer risk, and procedural justice theories, we demonstrate that the returns management process, rather than being regarded as an afterthought to the production and deployment of goods, can significantly and positively influence repurchase behavior. Additionally, we provide evidence that certain customers should be considered for prioritization in the returns process. We suggest ways through which operations managers can take care in discharging their responsibilities in this area – to make returns processing more than simply a "necessary cost of doing business" rather, using it to their advantage in engendering repeat and increased purchase behavior.

1. Introduction

The use of the Internet as a channel for the sale and distribution of goods from businesses to consumers (B2C) continues to grow, as does the research interest it garners from Operations, Logistics, and Supply Chain Management researchers. Online retailing increased from just about 3% of total retail sales in 2002 to over 6% of total retail sales in the United States by 2008 (Forester, 2010). In fact, online retail store growth appears robust even in the face of economic hardships given that online retailers registered 11% year-over-year sales growth in 2009, even as most conventional retailers were struggling to generate sales. Forrester (2010) expects the compounded annual growth rate of online retail to average 10% over the next five years. The reasons for this are twofold: firstly, the number of people connected to the Internet has increased substantially in the last decade. Secondly, the percent of Internet users who make purchases on-line has gone up from 10% in 2005 to 40% in 2007 (Nielsen, 2008).

While the above arguments indicate good tidings for the online retailing industry, individual retailers nevertheless continue to face several challenges. One key issue faced by online retailers is returns management (Ryder, 2010; Brohan, 2005). Returns management is defined as the process by which activities associated with returns, gatekeeping, and avoidance that are managed within the firm and across key members of the supply chain (Rogers et al., 2002). Long considered the forgotten step-child of operations and logistics managers, returns become increasingly important as firms seek to maximize the value they create for themselves and for customers (Mollenkopf et al., 2007; Stock, 1998). In a recent industry survey of supply chain managers, 87% of the respondents mentioned that effective management of returns was either important or very important to their organization's operational and financial success (Aberdeen, 2009). Returns management is an extremely important issue, causing reductions to profit of 3.8% per year (Petersen and Kumar, 2010). It has been further been argued that returns are even more relevant in online retailing than offline retailing given that consumers often do not have the opportunity to examine the product physically (Dholakia et al., 2005), an important aspect of product evaluation and assessment (Peck and Childers, 2003).

Yet, limited knowledge exists regarding if and how returns experience actually impacts customer loyalty, given that very few academic studies have heretofore quantified the impact of product

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returns on subsequent customer shopping behavior. Most studies on returns are typically anecdotal 'war stories,' or singular case studies in practitioner outlets or in the popular press (e.g., Brohan, 2005). Indeed, researchers have argued that there is a lack of research in the returns management area, especially on the effects of returns management in the supply chain (Mollenkopf and Closs, 2005; Mollenkopf et al., 2007; Mollenkopf et al., 2011). Also, most research focusing on returns management employs a single discipline approach, or remains focused on tactical and operational aspects such as production planning, inventory management, or reverse logistics (Mollenkopf et al., 2011). This leaves open a vast avenue of research regarding the customer impacts of returns. The current study fills this research gap. In this study we ask "Does customer experience with the product return process affect purchasing patterns following the return, and if so, how?" In particular, we focus on customers' experiences with the processing of returns and the speed of the ensuing credit issuance.

Our research question has strong implications for operations management. It is a given that it would be unwise for online retailers to offer a liberal returns policy without efficient and capable operational processes behind it. Thus, operations managers should be interested in knowing whether resource investment to build up operational capabilities in returns processing offers firm level benefits. Additionally, any insights into customer specific characteristics related to how returns should be managed would be instructive as well. This study seeks to answer the question of whether and how retailers should invest in this operational capability, by investigating the quick, effective provision of returns impact upon the top line (sales) for online retailers. We focus upon returns speed given its potential to influence the various transactional cost elements (i.e., price-type, time-type, psychological-type costs of Chircu and Mahajan, 2006), consumer risk costs (Taylor, 1974), and procedural justice (Lind and Tyler, 1988) valuations made by consumers while awaiting their returns credit. We employ TCE (Williamson, 1975), consumer risk theory (Taylor, 1974), and procedural justice theory (Lind and Tyler, 1988) to answer this question. We collect a set of detailed archival data by collaborating closely with an online retailer of educational items based in Asia, with customers all over the world. We study the purchase pattern of customers who returned a purchased product for credit to the online retailer in a chosen one-month period, and then track their purchase pattern for one year post-return and compare it with their purchase pattern one year pre-return. By comparing this group of customers with a second, similar group of customers who did not return any of their purchases, but were active with the retailer in the same time period, we isolate the effect of returns on customer purchase behavior.

This study contributes to the operations literature in three ways. Firstly, as already implied, it investigates an area in need of urgent and focused research – the value (if any) accrued to online retailers were they to invest in returns management processes. Secondly, it contributes to the academic literature by exploring an underrepresented body of literature – B2C customer service and, specifically, B2C returns service. Finally, it answers the call to more seriously pursue archival data sources for research in operations management (Boyer and Swink, 2008; Calantone and Vickery, 2009). We demonstrate that archival data can be used for quantifying the customer-level impact of B2C returns management – a research stream that can be very beneficial to future researchers.

The remainder of this paper is organized as follows. The next section summarizes the relevant literature from the operations, marketing, and logistics domains, and subsequently presents the research hypotheses. The research method is then presented, followed by the data analyses and a detailed discussion of the findings. Finally, the last section presents the implications of the study before concluding.

2. Literature and theoretical background

2.1. Returns management in online retailing—a balancing act

The provision of returns allowance by retailers is not new. The marketing tagline "Satisfaction guaranteed or your money back," originated in the late 1800s when Montgomery Ward first implemented this commitment to its customers (Brennan, 1991). In the contemporary business environment, most retailers offer some form of returns provision to shoppers. However, retailers continue to face several challenges with respect to returns, which are forcing some to rethink the value of offering liberal and easy returns policies. A retailer's offer of liberal returns hinges largely on one basic assumption: that consumers will not abuse the privilege by returning used merchandise without justification. However, findings from academic research as well as the popular press suggest otherwise. According to Rosenbaum and Kuntze (2005), nearly 20% of all consumers may be violating this assumption by buying products with the specific intention of returning them after satisfactory use. Similarly, Piron and Young (2000) find that almost 18% of all shoppers engaged in such behavior, a practice termed "retail borrowing." According to a report by Ryder (2010), over 13% of all HDTVs and 14% of all cellular phones are returned – with well over half having no fault: again suggesting the incidence of retail borrowing. It is because of retail borrowing (one form of return fraud) that several retailers such as Target, Home Depot, and Saks have reassessed their return policies. Yet, it is believed that tightening or liberalizing the policy can have impacts on consumer shopping behavior (Haarlander, 2001; Passy, 2002; Cha, 2004).

It is reasonable to assume that increasing the restrictiveness of returns will carry its own risks, the largest of which is losing customers, since an easy return policy is a part of the overall value proposition provided by the retailer (Dholakia et al., 2005). This risk is even higher in online retail than it is in other forms of retail given that online customers generally experience high levels of product uncertainty on account of not having actually seen or handled the product (Peck and Childers, 2003). According to Stock (1998), in the early days of online retail almost 40% of all online shoppers resisted buying online because of the perceived difficulty of returns. Even in more recent times, this rate of 40% persists (see Charlton, 2007; Bonifield et al., 2010).

There is some consensus that online retailers see a higher level of product returns than do conventional retailers, and yet, evidence suggests their cost of processing these returns on a per item basis is generally higher than it is for conventional retailers (Grewal et al., 2004; Dholakia et al., 2005), in part because conventional retailers can use existing physical sites to gatekeep returns (Grewal et al., 2004). Online retailers, lacking these pre-existing facilities to share with the returns process, are often required to establish distinct returns facilities, potentially increasing the return processing costs relative to their traditional retailer competitors. Thus, online retailers tightening their returns policy could impact their ability to appeal to prospective shoppers, conceivably imparting a competitive disadvantage in light of the importance of returns in the online retailing business. Retailers, and more specifically, online retailers thus walk a fine line between developing customer loyalty through liberal returns and losing money to retail borrowing and return fraud. Consequently, understanding the loyalty impacts of product returns is critically important for online retailers. Accordingly, our research model focuses upon the influence that returns management has upon a firm-level measure of customer loyalty–repurchase behavior.

2.2. Hypothesis development

We focus our attention on three post-purchase measures related to economic aspects of customer purchase patterns viz., order

frequency, number of items per order, and the average dollar-value of purchased items. We choose these measures due to their consistency with previous research in the online retailing industry (Reinartz and Kumar, 2002), as well as their similarity to commonly used metrics in the online and catalogue based retail industry.

There is considerable evidence in the literature to suggest that customers' comfort and confidence with a service provider are important determinants of purchase behavior with that service provider. The classic Howard-Sheth model of buyer behavior included customer confidence as a key determinant of purchase behavior (Howard and Sheth, 1969). Customer confidence with a service provider can be understood as the customer's feeling of trust and comfort with the service provider (Gwinner et al., 1998). The customer confidence model has become a classic in understanding buyer behavior in response to various independent variables (e.g., Laroche et al., 1996; Oliver, 1980; Sheth et al., 1988). Similarly, customer comfort has been used to explain the choices that reduce the complexity of the buying situation from the customer's perspective (Sheth and Parvatiyar, 1995). Paul et al. (2009, p. 223) define customer comfort as "the customer benefits [accrued because] his/her anxiety concerning a service encounter has been erased, and the consequent peace of mind associated with the same." Spake et al. (2003) demonstrate that customer comfort is positively related with the commitment that a customer has to a service provider – a precursor to loyalty. Thus, customers who have higher comfort with a service provider are expected to demonstrate higher commitment and increased loyalty to the service provider.

In the current study, customer comfort and confidence is best explained in conjunction with transaction cost economics (TCE) theory. Williamson (1975) bases his initial formulation of TCE upon the seminal work of Coase (1937) and shows that buyers and sellers experience costs associated with each step in the transactions involved with marketplace exchanges. In an exchange involving rational buyers and sellers, the price of the product is not the sole criterion contributing to transactional culmination; other costs exist that the buyer considers when arriving at a decision to purchase or not (Williamson, 1975, 1985). In an online setting Chircu and Mahajan (2006) conceptualize the online retail transaction as a sequence of steps, including store access, search, evaluation and selection, ordering, payment, order fulfillment, and post-sales service. Each of these steps has associated cost components. In an online retailing environment, TCE's costs can be quantified as price-type costs (credit charges, taxes, etc.), time-type costs (waiting time, delivery time, etc.), or psychological-type costs (perceived ease of use, inconvenience, frustration, annoyance, anxiety, etc.) (Chircu and Mahajan, 2006).

2.2.1. Order frequency

Consistent with prior research on TCE theory, we propose that consumers who are familiar with a firm's returns process exhibit higher comfort and confidence levels with a retailer (Gwinner et al., 1998; Sheth and Parvatiyar, 1995). This increased comfort and confidence in turn reduces their psychological-type transaction costs of future transactions, and we propose that these customers will purchase more from the retailer in the future as a result of these lowered transactions costs. The rationale for this assertion is as follows. Given that a customer has completed a successful return, they possess increased levels of familiarity and confidence in the returns process. This is in line with the arguments of Taylor (1974), who argues that as customers get more "handling information" (experience) about a process, they become more comfortable with it. In the current context, this comfort arises from the knowledge that it is possible to return a product to the retailer in case of dissatisfaction with the purchase. This knowledge should then create perceptions of reduced risk and consequently, enhanced confidence (Gefen, 2000). As argued earlier, we expect this confidence to manifest itself through increased loyalty with the retailer, which would result in increased activity (i.e., purchases) with the retailer (see Cooil et al., 2007; Wirtz et al., 2007; Gefen, 2000).

Therefore, we contend that as customer's confidence in a retailer grows, through series' of transactions, they experience the offerings of the retailer, and the associated transactional costs. Once these customers become, in this context, returns experienced, they have more complete understanding of the process, and as such their comfort and convenience is increased. As a result, post returns, we expect customers to increase their purchase frequency with the retailer. This gives rise to our first hypothesis.

H1. Returns-experienced customers purchase more frequently than customers having no returns experience with a retailer.

2.2.2. Number of items

We adopt a related, but subtly different theoretic lens to understand consumers' return experience's influence upon the number of items purchased following a returns experience. Taylor's (1974) theory on the role of risk in consumer choice holds that uncertainty on the consumer's part is felt as risk, and that consumer risk influences repurchase behavior. According to Taylor (1974), customer uncertainty can be considered to consist of two components: *uncertainty about the outcome* and *uncertainty about the consequences*. It is the combination of these two forms of uncertainty that often prevents trial of new or additional products.

In an online retail environment, *uncertainty about the outcome* (outcome uncertainty) can be understood as the concern arising from the ambiguity about the extent to which the outcome of a transaction could vary from successful product fulfillment (i.e., delivering the right product in a timely manner and standing behind it) (Pavlou et al., 2007). The online retailing environment provides numerous opportunities for outcome uncertainty because customers usually do not have the benefit of examining the product physically and are thus left "exposed" to risk (Peck and Childers, 2003; Pavlou et al., 2007). Tedeschi (2001) demonstrates that because of this "direct touch-and-feel experience" with the product, the likelihood of customers in an online environment ending up with a product that they do not like is quite high. Arguably, then, online retail shoppers are subjected to elevated levels of outcome uncertainty (Pavlou et al., 2007). Certain non-experiential attributes, such as product ratings and store satisfaction surveys, can help to reduce outcome uncertainty in an online retailing context (see Forsythe and Shi, 2003; Weathers et al., 2007).

Consequence uncertainty can be understood as the *extent* of perceived damage that would be done if the consequences of the act (in this case, the purchase) did not prove to be favorable (Gupta and Karahanna, 2004; Derbaix, 1983). Unlike outcome uncertainty, there is limited investigation of consequence uncertainty and how it impacts shopping behavior in online contexts. We propose that past experience with returns should reduce consequence uncertainty on subsequent orders, given that returns-experienced shoppers will realize that the consequence of an unsatisfactory purchase are limited, given confidence in the returns process (see Mann and Wissink, 1988). This consequence uncertainty reduction should result in a reduction of overall purchase uncertainty (Taylor, 1974) similar to how reduced outcome uncertainty reduces purchase uncertainty, and this should manifest itself in customers "taking more chances" and trying out products that they may not have purchased previously. Thus, one would expect to observe that returns-experienced customers would purchase more items post-returns than pre-returns since their consequence uncertainty regarding the returns process has been reduced. These arguments lead to our second hypothesis.

H2. Returns-experienced customers purchase more items per order than customers having no returns experience with a retailer.

2.2.3. Item value

The previous two hypotheses on ordering frequency and number of items per order suggest increased customer loyalty. Based on these, we argue that returns-experienced-customers have a higher level of loyalty as compared to non-returns-experienced (regular) customers. Several researchers have suggested that loyal customers are willing to pay more for their purchases compared to less loyal customers (Zeithaml et al., 1996; Phillips et al., 1983). Kotler and Armstrong (1996) argue that loyal customers are likely to buy more volume, try new products, or switch to higher profit (i.e., more expensive) items. Narasimhan (1988) finds that companies with more loyal customers are able to charge higher prices for similar products, compared to companies who enjoy lower levels of customer loyalty. Raju et al. (1990) demonstrate that firms with more loyal customers tend to rely less on discounts to sell items. The implications from these studies, as far as order dollar values are concerned, underscore that higher loyalty levels translate into purchase of higher priced items – an argument that, as we have argued, has some precedence in the literature (Reichheld, 1996; Reichheld and Schefter, 2000; Kotler and Armstrong, 1996). Based on the above arguments, we propose our third hypothesis.

H3. Returns-experienced customers purchase items with higher average item- value (average dollar value of purchased items) than customers having no returns experience with a retailer.

2.2.4. Speed of returns processing

As mentioned previously, returns processing can be thought of as a service recovery event. Mollenkopf et al. (2007, p. 219) note "an online retail return presents an opportunity for the Internet retailer to attempt a service recovery, even if the retailer has flawlessly delivered the product as promised, because the customer was not satisfied with the overall purchase experience." To connect the consumers' evaluations of their returns process experiences to the degree of their subsequent behavior change, we introduce procedural justice theory.

Procedural justice theory has been applied in the marketing literature extensively to understand how consumers respond to service recovery events like the returns process (Tax et al., 1998; Maxham and Netemeyer, 2002; Smith and Bolton, 2002; Maxham and Netemeyer, 2003; Homburg and Furst, 2005). Procedural justice refers to the fairness of policies and processes employed in pursuit of organizational outcomes (Lind and Tyler, 1988). Seiders and Berry (1998) suggest that processes are integral to the offerings presented to consumers, and that retailers enhance customer satisfaction when they engage in activities that enhance customer perceptions of procedural justice (Maxham and Netemeyer, 2002). Maxham and Netemeyer (2002), in assessing customer reactions to service recovery efforts show that procedural justice has a strong influence upon customers' overall firm satisfaction. Smith and Bolton (2002) test the influence of procedural justice upon a range of emotions customers experience amid service recovery. These emotions, as experienced by the consumer result in the psychologically based TCE costs viz. inconvenience, frustration, annoyance, anxiety, described by Chircu and Mahajan (2006). Further, Smith and Bolton (2002) find that customer perceptions of procedural justice helps alleviate these costs in the customers mind, thereby facilitating improved satisfaction with recover efforts.

The current research examines the speed with which returns are handled and credit processed, a key component of the overall returns experience. The operational steps that precede the issuance of credit include: the receipt of the return request, the routing of the return (including the generation of a return material authorization (RMA) in many cases), receipt of the return (with verification and inspection of the merchandise to confirm the legitimacy of the return (i.e., gatekeeping)), and selection of the appropriate disposition of the merchandise (resell as new, secondary markets, donation, or disposal) (Rogers et al., 2002). Therefore, the speed of the refund is the culmination of the previous steps performed jointly by the consumer, transportation service provider (physically moving the item), and the retailer in the returns management process.

Literature suggests that when customers perceive the service recovery effort by the firm to be high, the original negative opinion of the firm is diminished considerably (Oliver, 1997; Bearden and Teel, 1983; Oliver and Swan, 1989). Indeed, Boshoff (1997) finds that the subsequent customer satisfaction with the service recovery is positively related to the level of recovery effort on the part of the firm. Similarly, Harris et al. (2006) demonstrate that the level of recovery provided by a firm attempting to come back from a faulty service incident influences the subsequent satisfaction level, repurchase intentions, and word-of-mouth intentions of the affected customers. Several other studies in the customer satisfaction literature also find that the level of service recovery is positively related with service encounter satisfaction (Kelley and Davis, 1993; McCollough et al., 2000). Thus, there is evidence to suggest that the level of service delivered by operations management activities in the returns process (service recovery) should show a positive relationship with the degree of satisfaction held by the customer (c.f. Smith and Bolton, 1998). As noted earlier, increased satisfaction with a service encounter leads to an increased inclination towards maintaining loyalty to the service provider, which, in turn, manifests itself in increased order frequency, number of items per order, and the purchase of higher priced items.

Consistent with previous research, we argue that in an online retailing return scenario, operations performance, represented by the speed of refunds to the customer, will influence the customer's future purchase actions (Grewal et al., 2004; Dholakia et al., 2005). Maxham and Netemeyer (2002), also applying a procedural justice theory lens to service recovery operations, operationalize procedural justice in part as customer perceptions of recovery speed, finding that as recovery speed quickens, customers satisfaction improves. Similarly, we contend that the customer is sensitive to operations performance, and that the speed of refund should be related to the extent of customer based loyalty measures already established (order frequency, number of items per order, and average item value). This extent of increase can be measured as the percentage increase that these loyalty measures exhibit, over and above their initial values. This leads to our fourth through sixth hypotheses.

H4. Refund speed is positively related to the percentage increase in order frequency;

H5. Refund speed is positively related to the percentage increase in average number of items per order.

H6. Refund speed is positively related to the percentage increase in average item value.

2.2.5. Control variables

It is important to control for product and transaction level factors that may impact overall satisfaction and subsequent repurchase behavior. At the transaction level, prior research has shown that customers are more forgiving of service failure as the length of their relationship with the firm increases (Anderson and Weitz, 1989; Bitner and Hubbert, 1994). Established customers appear to employ a more broad-based perspective across multiple purchase experiences, as opposed to an individual transactional experience (Folkes, 1984; Hess et al., 2003). Established customers are, therefore, usually more understanding when something goes wrong, and more willing to overlook small failures (Anderson and Weitz, 1989; Ganesan, 1994; Lusch and Brown, 1996). In light of these observations, it is important to control for the effect of the history of

Dependent Variable	Hypothesis
Order Frequency	H1: Post Return > Pre Return
Average Number of Items per Order	H2: Post Return > Pre Return
Average Item Value	H3: Post Return > Pre Return

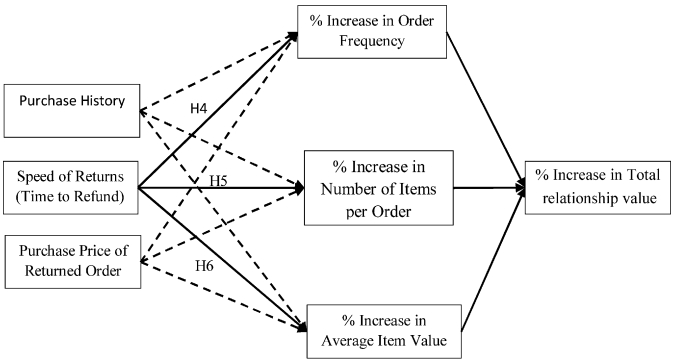

Fig. 1. Summary of research hypotheses[6] .

the relationship (purchase history) between the consumer and the firm.

Similarly, among product level factors we chose to control for the dollar value (purchase price) of the returned order, as customers may be more forgiving of faults with small-value orders than with orders of larger value. Mangini et al. (2007) demonstrate that the cost of the service being recovered is an important factor that determines satisfaction with the recovery efforts.

The research model is summarized in Fig. 1. As can be seen, we propose two distinct yet related sets of hypotheses – the first three hypotheses (H1–H3) deal with understanding the difference between the *pre-return* and the *post-return* purchase patterns of customers on key online shopping metrics, thus laying the foundation for the next three hypotheses. The second set of hypotheses (H4–H6) deals with assessing the degree with which speed of refund affects the percent change in outcomes for returns-experiencing customers. We control for the effect of relationship length, as measured by the number of transactions between the consumer and retailer, and the dollar value of the returned orders. Effectively then, the research model investigates the relationship between the completion of the returns experience and key factors that drive firm value (Fornell et al., 2006; Ittner and Larcker, 1998; Gupta and Zeithaml, 2006), and particularly, in an online retail context (Reinartz and Kumar, 2002). The next section describes the research method.

3. Research method

This research was conducted in collaboration with an online retailing company having interests in several different media retail businesses (books, magazines, CDs, DVDs, etc.), all related to the educational sector. It has a total database of several hundred thousand active or semi-active consumer customers, the majority (>50%) of whom are in the age group of 20 to 25 years, while the 25 to 30 year age group represents 23% of their customers. In terms of dollar value of annual sales, the company would rank between 500 and 1000 within the United States, had it been located there, according to the *Second IR500* guide (IR 500, 2011). The results reported here are from the high-value book retail business, which sells and ships books to consumers in several different countries subject to selling rights.

We choose the book business for several reasons. First, books are among the earliest and most successful products to be sold online (Pavlou et al., 2007). Second, this is one product category where there is substantial repeat purchase (Gefen, 2002), and thus we should be able to observe our hypothesis test results much more readily than in other product lines. According to the 2009 *Internet Retailer* top 500 report, online book retailers have the second highest percentage of returning shoppers (an estimated 42.82% of shoppers at online book retailers are repeat shoppers, second only to mass merchants who have 44.43% repeat shoppers) (IR500, 2010). Additionally, books are also one of the top three categories for product returns, in online retailing, with return rates exceeding 15%, and sometimes reaching as high as 30% (Canadian Business, 2008; Hugos and Thomas, 2005). Finally, it has been suggested that the impact of returns policies is most explicitly observable in products that cannot be consumed immediately and that have fairly high salvage value (Davis et al., 1998), which is another characteristic applicable to the book retail business. Given that book purchasing customers exhibit substantial repeat purchase behavior (Gefen, 2002), and it is the second-most returned product type (IR500, 2010), the study of online book sales is appropriate for this returns focused research.

Typical of online retailers today, the returns policy of the focal company conveys a firm's ease and openness to product returns. The company's policy states that a full refund is issued subject to the return of merchandise so long as the item(s) is/are handed to their chosen carrier within 7 days of receipt of the merchandise. As is common with online sales, customers must authorize the return in advance of sending the merchandise back to the retailer. Instructions to this effect are provided to customers with each delivery, with the returns policy stated explicitly on the retailer's website.

The company allowed the research team access to the computer servers where the retail sales and returns data were logged and also provided cooperation on several other data collection matters. Multiple site visits were made to the company's offices in order to access the data logs. The data were collected in January 2011 and since the research design called for at least one year of post-return purchases to be available for analysis (to nullify seasonal effects), we studied those customers who returned a product between 15 December 2009 and 15 January 2010 (a total "returns window" of 31 days). These dates were chosen because, according to the company, this date range represents the highest period of returns requests during the year. We identified 617 product returns during this time period. While it is not possible to divulge the exact percent of all orders that this number represents for confidentiality reasons, this percent does indeed lie within the industry norm of 2–11% suggested by trade publications (Brohan, 2005).

Out of the 617 returns, we removed customers who could not be paired with potential future purchases due to a lack of a login ID (i.e., anonymous customers), and those who had a purchase history of less than a year prior to the return. This provided us with 195 customers who fulfilled all the required criteria to remain a part of the sample, we call this treatment group of customers "product returners".

In order to isolate the effect of the return, we needed to compare the product returners with a control group of randomly selected customers with no returns history ("non returners"). If the return-experiencing group of customers shows a change in behavior in the second time period (consistent with H1–H3), and the control group does not, and if both these groups were similar in all respects

[6] Dotted paths represent controls.

Table 1
Study design.

Time period	Treatment Group–(Product Returners)	Control Group–(Non Returners)
January 2009–December 2009	Product Returner–Before Return Episode	Non Returner–Period 1
January 2010–December 2010	Product Returner–After Return Episode	Non Returner–Period 2

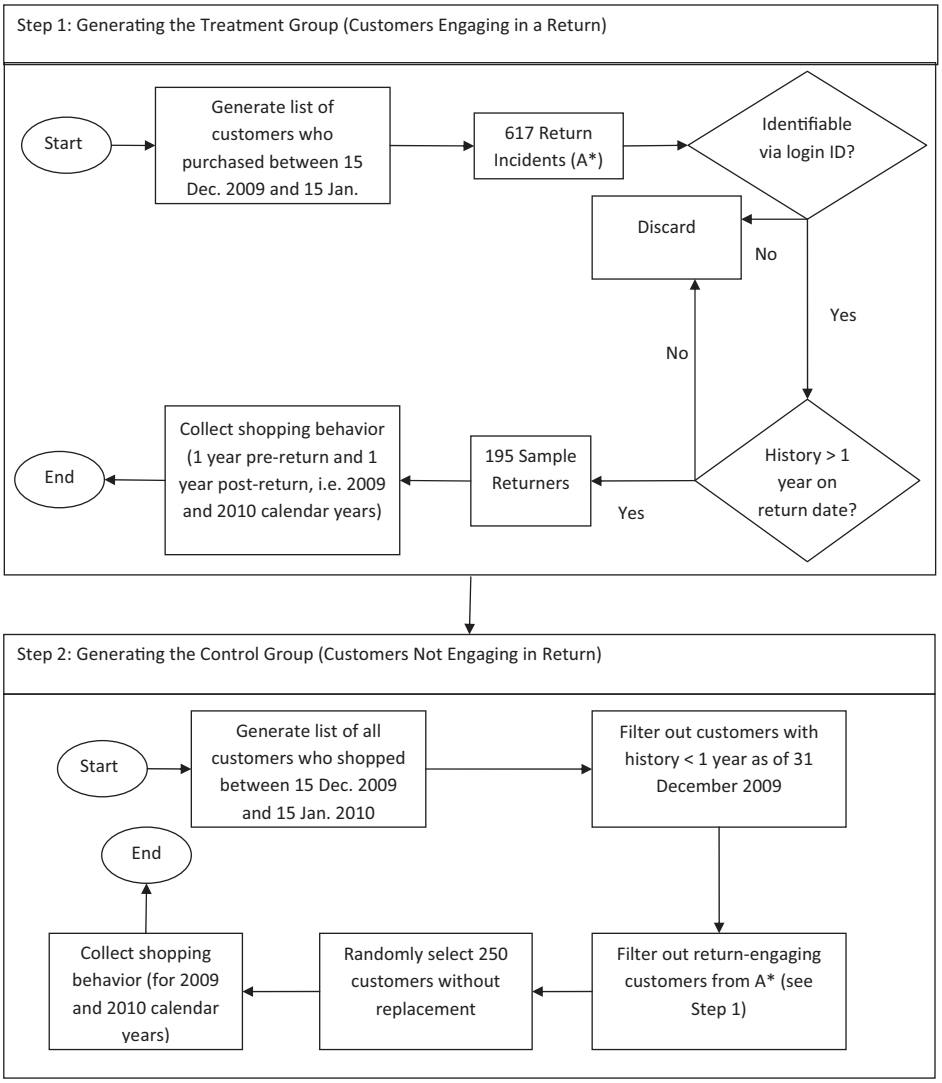

Fig. 2. Flowchart of research method.

in the first time period, then it can be argued that experiencing product returns is correlated with a change in behavior, as the two groups are otherwise similar. To populate the control sample for this comparison, we generated a list of customers who had at least a year-long purchase history with the retailer as of 1 January 2010. Two hundred and fifty observations were randomly drawn from this list and their purchase history was tracked for the twelve months prior (January 2009–December 2009) and twelve months post (January 2010 to December 2010). This cutoff date (1 January 2010) was chosen to correspond as closely as possible to the returns occurrence in our treatment group, since it is almost exactly in the middle of our "returns window." Thus, the treatment group (product returners) and the control group (non returners) data were both available for a 24-month period (January 2009–December 2010). As a result, we employ a 2×2 factorial type quasi-experimental design for the research. This is illustrated in Table 1. Fig. 2 provides a flowchart of the research method. We now proceed to describe the various items of interest in this study, and how they were measured.

3.1. Speed of refund

We define a return episode as a customer originated contact made with the retailer, in order to return a purchased product to the retailer. A return is considered complete once the retailer has received the returned merchandise and authorized a refund to the customer. With our online retailer (as with most other online retailers), numerous operations activities are involved in processing these returns, including authorizing the return, receiving the return, verifying and inspecting the merchandise, determining disposition, and authorizing the refund for the customer. Depending on a variety of factors including the product itself, the day of the week that the return is received, the facility where the return is made the process of refunding the customer currently varies

between 2 and 7 days[2] from the time of receipt of the returned merchandise.

3.2. Order frequency

Order frequency is measured as the number of times in a given time period that a customer places an order (Waller et al., 1999). In the current study, we measure it as the number of orders placed in the two 12-month windows under consideration. The reason for choosing a 12-month window is because a shorter window might not be sufficient to capture all purchases especially the seasonality of purchases, while longer time windows make tracking customer behavior more difficult as shipping addresses, credit card numbers, and login IDs are likely to change over time.

Additionally, it is conceivable that customers returning products may order a replacement in place of the returned product. As such, this replacement order should not be considered a new order for the purposes of this study, as it might serve to replace the already-returned item(s). Conservatively, we decreased the number of orders for all returns customers in the treatment group in the post-return time period by one, in order to account for this possibility. Arguably, this approach may be overly conservative. However, any other approach opens up the possibility of inappropriately counting orders that should not be considered.[3] The percent increase in order frequency between these two time periods is thus calculated as: $((F_2 - F_1)/F_1) \times 100$.

3.3. Average number of items per order

The percent change in average number of items per order was measured as a separate variable from the orders themselves, because customers may place several small orders while others may place fewer large ones (Fader and Hardie, 2001). The percent increase in the average number of items per order between these two time periods is thus calculated as: $((N_2 - N_1)/N_1) \times 100$.

3.4. Item value

We operationalize the percent change in average item value as the total of the customer expenditure on shopping with the retailer in the 12-month period divided by the total number of items ordered in that time. The percent increase in item value between these two time periods is thus calculated as: $((V_2 - V_1)/V_1) \times 100$.

3.5. Total relationship value

One concern with changing customer purchase behavior is that customers average item value, frequency, and number of items ordered may all change at the same time, and that without an aggregate representation of the overall value of the relationship, offsetting changes could be interpreted incorrectly. As an example, if after a successful product return a customer modified their behavior and purchased twice as frequently with the same average item value, but ordered half as many items each time, assessing only the individual indicators may show significant changes while the overall value of the relationship to the retailer would not have changed at all. To account for this, we develop the measure of total relationship value, which are the total expenditures that the customer has with the online retailer in a defined amount of time. It is calculated using the formula: $TRV_i = F_i \times N_i \times V_i$ where:

F_i = order frequency in time period i, N_i = average number of items in each order in time period i, and V_i = Average item value in time period i.

Thus, the percent increase in relationship value between time period 2 (post return), and time period 1 (pre-return) is calculated as $((TRV_2 - TRV_1)/TRV_1) \times 100$. Note that while we do not propose a formal hypothesis around this measure, it is an important check against the potential of internally shifting customer purchase behavior, and thus we include it in the model.

3.6. Purchase history

Past research indicates that purchase history between buyers and sellers should be operationalized in terms of the number of previous transactions between the parties, rather than chronological time elapsed in the relationship (Hess et al., 2003). This is because while a customer may have a long-standing chronological relationship with a retailer, the number of purchase experiences with the retailer better informs the customer about the retailer's performance than mere time. For example, a customer purchasing from a particular retailer only once in a two-year period is less experienced with that retailer than a customer who has purchased four or five times within the past year. Consequently, we measure purchase history as the number of previous transactions between the customer and the online retailer. This is consistent with previous research on cumulative customer purchase behavior (e.g., Hess et al., 2003; Rossi et al., 1996; Holloway et al., 2005).

3.7. Purchase price of returned order

It has been argued that the consequences of failure for more expensive items are greater than the consequence for less expensive ones (c.f. Hart, 1988). Mangini et al. (2007) demonstrate that the cost of the failure being recovered is an important factor that determines satisfaction with the recovery efforts and consequent customer behavior with the retailer. Consequently, when investigating the relationship between product returns and future purchase measures, it is important to control for the purchase price of the returned order.

4. Data analysis and results

In this section, we describe the data analysis and present the results. We begin by establishing the equivalence of the treatment and control group in the initial, pre-return, time period. Upon demonstrating equivalence, we then focus on the testing of our research hypotheses.

4.1. Establishing control group and treatment group equivalence

The descriptive statistics for all the groups are presented in Table 2. Control group purchases between January 2009 and December 2010 were split into two 12-month segments; time segment 1 corresponded to the purchase data between January 2009–December 2009, while time segment 2 corresponded to purchase data between January 2010–December 2010 (see Table 1 for an illustration of group and time assignments).

Unpaired t-tests performed to ensure that the purchase pattern for the control group is similar to the treatment group in the pre-return time period (Time 1) indicated that all three measures of order frequency [$M = 0.01$, $t = 0.06$, $p = 0.946$], average number of items per order [$M = 0.03$, $t = 1.18$, $p = 0.24$], and average item value [$M = 1.57$, $t = 1.28$, $p = 0.20$]) fell below the critical difference threshold for statistical significance, evidence that the treatment group

[2] Not including the time taken by the credit card companies to put the paid amount back on the card, which we do not capture here, and over which the retailer has no control.

[3] All subsequently reported statistics for the treatment group's post-return order frequency, refer to this *reduced* frequency number. The *unreduced* results are available upon request, and show even stronger effects.

Table 2
Descriptive statistics for the treatment and control group.

Group	Measurement	January–December 2009 (Time 1)			January–December 2010 (Time 2)		
		Order Freq.	Avg. No. of Items	Avg. Item Value	Order Freq.	Avg. No. of Items	Avg. Item Value
Control Group (Non-Returners)	Mean	2.17	1.13	40.91	2.11	1.11	41.38
	Standard Deviation	1.54	0.29	14.22	1.62	0.28	14.02
	Order Frequency	1			1		
	Avg. No. of Items	−0.06	1		−0.03	1	
	Avg. Item Value	0.029	−0.33	1	0.18	−0.38	1
Treatment Group (Product Returners)	Mean	2.16	1.10	42.48	2.83	1.21	45.57
	Standard Deviation	1.57	0.23	10.74	1.64	0.36	12.38
	Order Frequency	1			1		
	Avg. No. of Items	−0.03	1		−0.09	1	
	Avg. Item Value	−0.002	−0.47	1	0.26	−0.32	1

and the control group exhibited similar purchase patterns in the first time period. Additionally, paired *t*-tests indicated that for the control group the second time period (corresponding to the post-return time) was similar to the first in terms of order frequency [$M = -0.064$, $t = 1.452$, $p = 0.148$], average number of items ordered [$M = 0.020$, $t = 0.78$, $p = 0.43$], and average item value [$M = 0.476$, $t = 1.385$, $p = 0.167$], indicating the control group did not change their purchase pattern significantly in the two time periods.

4.2. Hypothesis test results

Paired t-tests were performed to test H1–H3. Results indicated that the treatment group demonstrated significantly increased order frequency [$M = 0.65$, $t = 12.92$, $p < 0.001$], increased average number of items per order [$M = 0.12$, $t = 5.13$, $p < 0.001$], and increased average item value [$M = 3.09$, $t = 4.54$, $p < 0.001$], indicating support for H1–H3. Additionally, given that we have demonstrated that the control group did not change significantly in these corresponding time periods, there is evidence that this change in purchase patterns in the second time period was, indeed, coincident with the treatment in question–i.e., the returns experience. These results are illustrated in Fig. 3. We will discuss the detailed implications of these results in the next section.

Given support for H1–H3, we now proceed to examine Hypotheses H4–H6, which examine the influence of returns processing and its influence upon economic aspects of post-return purchase patterns. Recall that these hypotheses relate the percent increase in our three economic dependent variables (order frequency, average number of items per order, and average item value) with the speed of purchase refund for the product returners. Thus, hypotheses H4–H6 propose direct paths between the speed of refund and the increase across the three dependent variables (order frequency, average items per order, and average item value) after controlling for the effect of purchase history and purchase price of the returned order. The model to be tested for H4–H6 appears in Fig. 1. In this context, the percent of increase in all these dependent variables is measured between the post-return levels (calendar year 2010) and the pre-return levels (calendar year 2009).

In the current study, we are interested in simultaneously testing the relation between the independent variable, controls, and multiple dependent variables represented in Fig. 1. Seemingly unrelated regression (SUR) was used to test H4–H6 out of concern for potential error correlations across some of these terms. As argued, two of our variables – purchase history and price of the returned order may be related with each other (Narasimhan, 1988), which could give rise to correlated error terms. Testing of our data with the Breusch-Pagan test indicated that the errors were not completely uncorrelated (Chi-squared = 58.20; 6 DF, $p < 0.001$), suggesting SUR is appropriate, given it was developed specifically to address situations like this (Zellner, 1962; Greene, 2003). SUR's ability to account for contemporaneous cross-equation error correlations makes it superior to other approaches like path modeling, in situations like ours, where several equations are being tested and the possibility exists that variables in the models are related (Devaraj et al., 2010; Autry and Golicic, 2010).

The results are summarized in Fig. 4 and demonstrate support for H4 [$Z = -12.23$, $p < 0.001$]. To reiterate, the independent variable in this case is the number of days taken by the retailer to issue the refund. The negative sign of the coefficient [−12.23] indicates that as refund speed increases, the greater the increase in subsequent order frequency, thus supporting H4. Similarly, support is also obtained for H5 [$Z = -12.23$, $p < 0.001$], indicating that as refund speed increases, subsequent number of items per order increases. Similarly, support is found for H6, regarding average item value, which also increases with faster returns processing time [$Z = -4.31$, $p < 0.001$]. Taken together, we see that customers appear to change their purchase pattern after a return experience in ways that may be favorable to the retailer, but more importantly from an operations perspective, as the speed of returns processing increases, the beneficial impact upon future purchase behavior increases as well.

As previously discussed with regard to relationship value, though not directly hypothesized, we also tested to ensure customers were not trading frequency for numbers of items purchased, or item value, or any of the other potential tradeoffs between these three outcomes. As can be seen in Fig. 4, these types of behavior were not apparent, indicating that the individual effects seen in order frequency, numbers of items purchased, and average item value are aggregating into increased overall relationship value.

Among the controls, one factor possessed significant explanatory power regarding changes in shopping pattern – the purchase price of the returned order. The path from this controlling factor to the percent increase in order frequency is positive and significant, indicating that the higher the purchase price of the returned order, the more likely the customer is to increase their order frequency with the retailer in the future. However, this increase is limited only to order frequency and does not substantially impact the percent increase in number of items purchased per order or the item value. Additionally, limited support for the purchase history link suggests that established customers do not demonstrate lower expectations than new customers regarding speed in returns processing. Existing customers are just as likely to increase (decrease) purchases with the retailer if the returns experience is fast (slow), as compared to new ones.

4.3. Post hoc testing

Subsequent to the hypothesis testing, post hoc testing was performed to ensure that the potential influence that pre-return

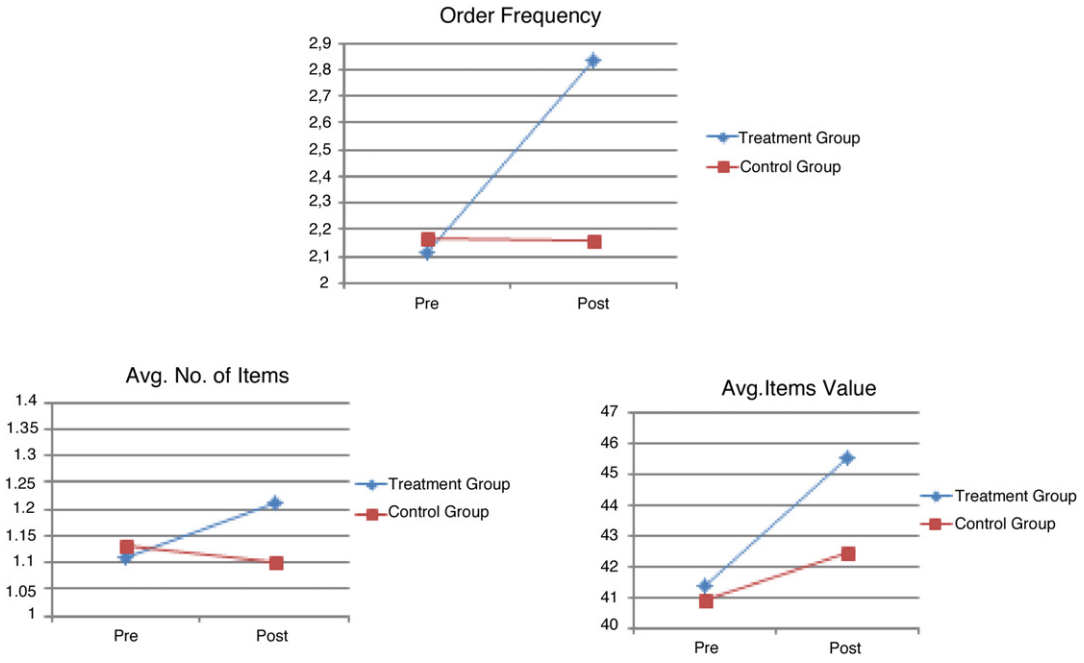

Fig. 3. Graphical illustration of results.

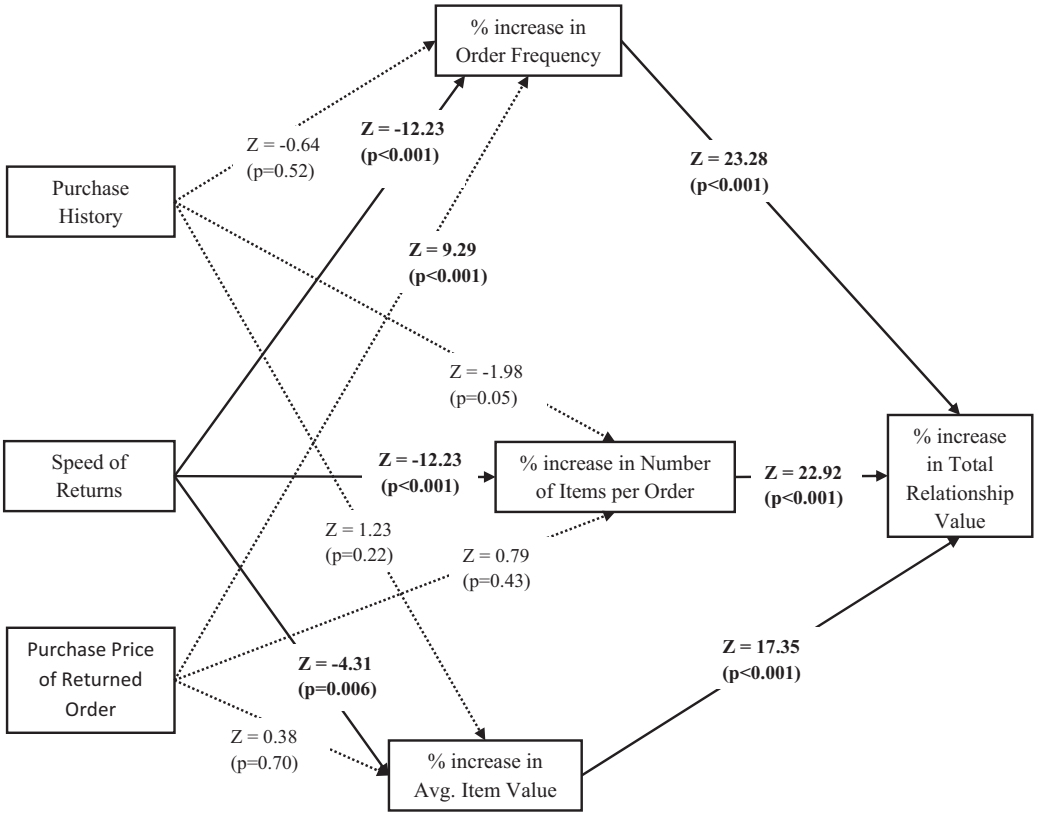

Fig. 4. Seemingly unrelated regression results[7].

scaling factors of the customers (their individual order frequency, number of items ordered, average item value) did not affect the analysis. This was performed because the hypothesized model considers the proportional difference in these outcomes and their relationship with percentage of increase in total relationship value. In developing the model the outcomes needed to be either actual values, or proportional, and so to ensure that the most thorough analysis was performed, we have accounted for the potential of these scaling influences in a post hoc assessment. To accomplish this, the pre-return order frequency, number of items per order,

[7] Z values reported. Significant relations are highlighted in **bold**. Significance levels of all paths are noted in parentheses.

and the average item value were regressed against the relationship value measure. The overall model results did not change as a result of this, and all significant and non-significant relationships remained the same, although slight differences in values occurred as a result of including extra factors in the analysis. With regard to the scaling factors' relationship with the relationship value construct, all three factors (order frequency, number of items ordered, average item value) were not significant, indicating that the original value of these factors did not significantly affect the percentage of increase in total relationship value observed. Essentially, 'large' and 'small' customers experienced similar proportions (percentages) of increase in the overall relationship value. The implications of this and the other findings will be discussed in section five.

5. Implications, limitations, and future research

5.1. Implications for operations managers

Online retail purchases can involve a high amount of risk, as customers do not have an opportunity to examine the product pre-purchase. Given that 8% to 11% of all online purchases are returned (Shop.org, 2009; Brohan, 2005) and that many online retailers lack the expertise to efficiently process and manage returns (Grewal et al., 2004), it comes as no surprise that online retailers find it hard to retain customers (Shop.org, 2009; Rao et al., 2011a). Our findings demonstrate that rather than solely viewing the 8–11% return rate as a challenge, it might also be viewed as an opportunity to delight customers and create more loyal shoppers. As we show, faster returns processing is correlated with customer retention, increased purchase frequency, and purchase amount. All these should translate into top-line sales growth for the online retailer.

We argued earlier that online retailers now compete not only with themselves, but also with brick-and-mortar retailers who have traditionally had substantial experience with handling product returns. We thus contend that online retailers investing in operations management practices, training, and capital investments focused upon increased returns processing speed should be rewarded in the marketplace with more loyal customers who purchase more, and with greater frequency. Additionally, our results suggest that when customers approach an online retailer with an intention to return a purchased product, for some customers, the retailer may benefit from encouraging, rather than discouraging, such intentions. This is a fundamental change in how returns are currently viewed, both by operations and sales functions within a firm (see Davis et al., 1998). Typically, operations managers would prefer to handle as few returns as possible, and sales managers prefers to keep sales from falling off the books through returns. This is consistent with the literature as well; several researchers suggest that firms view returns as a necessary cost of doing business rather than as an opportunity to create customer loyalty (Blackburn et al., 2004).

That much said, retailers of all kinds struggle with gatekeeping, ensuring that only legitimate returns are authorized for credit (Rogers et al., 2002; Davis et al., 1998). Gatekeeping is particularly challenging for online retailers that lack the ability to inspect merchandise until it is received at the processing facility–an ironic twist to that risk faced by consumers upon pondering an online purchase (noted earlier in the hypothesis development). A good returns policy is not merely liberal, but has effective gatekeeping that can distinguish legitimate returns from illegitimate ones. Further, analytics that help retailers to capture not only the most profitable customers, who one seeks to make more loyal, but also identify the abusers of liberal returns policies are essential to maximizing the value of a firm's returns service offering.

We contend, however, that these investments in returns processes are merited, as a positive returns experience can reinforce in the customers' minds that they are making the right choice by buying from a retailer. This, in turn, encourages the customer to try other items that they may not have otherwise considered, as demonstrated by the increase in number of items ordered, after a completed return. One easy-to-implement implication for managers is allowing product return reviews. A casual browse of most online retailers will reveal that they provide places where customers can provide product reviews and/or order fulfillment reviews, but there is rarely a review column for customer returns experiences. As we have demonstrated, returns have the potential to create loyalty, and allowing return-reviews could be a valuable add-on to many online retailers. Further, results associated with our control variables suggest that this beneficial result is not exclusive to dealing with new customers. The beneficial effects of returns engagement also influence experienced customers.

Related to this issue, and directly impacting operations' activities in managing the returns process, we uncover some interesting evidence as to how operations managers should consider sequencing the processing of returned items. In our post hoc testing we sought to assess whether the observed effects of the percentage of increase in total relationship value was influenced by pre-return on order frequency, number of items ordered and average order value or not. The results showed that the scaling of these factors did not significantly influence the relationship; the proportion of increase in the relationship value was consistent whether the customers were large or small (on order frequency, number of items ordered and average order value).

From a returns management processing perspective, this is an important finding. This indicates that whether the original order frequency, number of items ordered, and average order value are smaller or larger, the percentage increase in relationship value in response to improved returns speed, is not significantly different.[4] However, this does not mean the increase in relationship value in dollars are not significantly different, only the percentage. Two customers, one with a base relationship value of $20 and another with a base value of $100 are not significantly different in their reaction, percentage-wise, to increased returns speed. This implies that the customer with the higher relationship value at the outset should probably be given priority over lesser-valued customer in the returns process. Operationally speaking, this means that when confronted with a bin full of returns, the returns operation should consider implementing an ABC priority system, where the high relationship value customers are assigned the highest priority, and the remaining customer assigned appropriate classifications based upon their value to the retailer. While this is not an unusual notion, ABC priority systems are not uncommon, to the best of the authors' knowledge, empirical evidence of this in a returns setting is unique, and instructive to those operating returns processes. Building upon this, retailers can facilitate returns operations during their outbound distribution process, potentially indicating the priority a returning delivery should be managed by in the data embedded within the preprinted return label or return authorization (where used).

Shifting our focus to policy issues, our results also suggest that even though retailers incur costs associated with restocking and other returns activities, it might be prudent to bear these costs themselves, rather than pass them on to the consumer, as the subsequent loyalty and enhanced relationship value may be more than enough to offset these costs. In an industry report, Brohan (2005)

[4] Similar analysis regressing aggregated pre-return relationship value (rather than its three components) against percentage increase in relationship value was also not significant.

reports that 88% of responding online retailers said they are able to process a return for less than $15. As we have demonstrated, the increased purchase frequency and willingness to buy higher priced (and, potentially, higher margin) products could more than offset this cost of returns processing for online retailers.

Finally, online retailers can gain one simple, yet practical insight from this study. Given that customers are sensitive to the speed of the refund process (as demonstrated in H4–H6), and given the insignificance of purchase history as a control variable indicates that speed of return is more important than familiarity with the retailer, it likely that merely informing customers when their refund has been issued may be helpful in engendering customer loyalty. Indeed, often times, retailers have limited control over how quickly customers receive their money back, especially given that different customers use different modes of payment. Different credit/debit card companies, and other financial intermediaries (e.g., paypal) take varying amounts of time to put the money back on the credit card, and thus an informing the customer that a refund has been released and the customer's money is now "out of their hands," may comfort the customers, and expedite the perceived speed of refund provided by the retailer. This is consistent with the suggestion of Taylor (1974), who argues that customers privy to more "handling information" about a process are more comfortable with it, as well as Maxham and Netemeyer's (2002) operationalization of procedural justice as the speed with which customers perceive a service recovery to have been addressed, and is consistent with our finding that customers receiving faster returns are more comfortable with the retailer, and purchase more in subsequent periods[5].

5.2. Implications for research

From an academic perspective, we test an empirical model of returns in online retailing–an area that has heretofore received very limited attention in the literature. Indeed, researchers have suggested that operations and supply chain management researchers were giving insufficient attention to factors affecting the success of Internet retailing (Boyer et al., 2002). While several recent studies have addressed this criticism by investigating operations-related issues in this growing business (e.g., Rabinovich and Bailey, 2004; Rabinovich et al., 2007, 2008, 2010; Rabinovich and Evers, 2003; Boyer and Hult, 2005, 2006; Thirumalai and Sinha, 2005; Rao et al., 2011b), significant work remains in order to understand the role of operations in the overall landscape of online retailing, especially in areas such as returns management. To a large extent, the returns management literature has not been explicit in addressing issues related to the customer value that returns create (Mollenkopf et al., 2011). Granted, some researchers have made initial attempts to investigate customer-centric issues concerning returns management in online retail (e.g. Mollenkopf and Closs, 2005; Mollenkopf et al., 2007), but even these studies have been devoid of actual purchase data, or have stopped short of tracking customers over an extended period of time (e.g. Rabinovich et al., 2010). We contend that this research extends of the work of these previous researchers by incorporating measures of actual purchase behavior subsequent to a return, rather than perceptual measures of the same.

At a more general level, interest shown by operations management researchers in areas such as returns management, reverse logistics, and product recovery is increasing (Guide and van Wassenhove, 2006; Mollenkopf et al., 2011; Rogers et al., 2002; Kocabasoglu et al., 2007; Rubio et al., 2008). Yet, most of this research tends to focus on tactical and operational aspects of the problem, addressing issues related with *how* to deal with returns, especially issues such as production planning or inventory management in the face of returns (Mollenkopf et al., 2011). While these are valuable, what is lacking is research in returns that focuses on the strategic implications of operations management investments in customer facing services like returns processing – i.e. *why* to accept returns (Rubio et al., 2008; Mollenkopf et al., 2011). The current study addresses this gap by demonstrating that improved operations performance in returns can be a means to nurturing long-term customer commitment, loyalty, and enhanced overall relationship value.

Second, this study illustrates the synergies generated by bridging operations management and marketing in online retail. Researchers increasingly assert the value of linking business processes within and across companies (e.g., Cooper et al., 1997) and have long-suggested that operations and marketing should do more than just coexist (Abernathy, 1976). Flint and Mentzer (2000) demonstrate the critical role that operations management can play in creating customer value. Yet few other studies have explicitly investigated the impact of operations performance on measures typically considered outside of the operations sphere. By investigating the relationship between returns (typically an operations issue) on post-return shopping patterns (typically a marketing issue), this study ventures into this relatively under-researched area. This is consistent with the findings of Mollenkopf et al. (2011), who advocate that returns management is critically important to both operations and marketing, and that future research examining such cross-functional collaboration is important, and can help address critical business issues. Further we argue that increased investments in operations performance focused upon returns are valuable, and potentially profit-driving for the firm.

5.3. Limitations

As with any study, this research too has limitations and its results should thus be interpreted accordingly. We list below some of the limitations of this study, each of which also provides avenues of further investigation. For instance, in the current analysis, we do not distinguish reasons cited among the returners for their decisions to return the product. Thus, we do not differentiate between customers who returned the product because of factors such as product/delivery issues and other factors, such as buyer's remorse or retail borrowing. Indeed, the argument could be made that post-return purchase patterns would differ based on the cause of the return.

We focused our assessment of returns upon the speeds of refund to the consumer. Several other indicators of returns quality could also influence the consumers and their decision to make follow-on purchases. While these could possibly be included herein (e.g., restocking fees, return policy liberalness, number of days allowed for returns), we chose instead to hold each of these factors constant by dealing with a single retailer. We recognize they could have influence as well, and suggest that subsequent research examine varying levels of these factors.

This research examined a single product category (books). Though examining any type of retailer serves to present generalizeability limitations, the current analysis provides a basis upon which subsequent studies can introduce additional factors and outcomes to different products and different settings. With regard to books as the product category examined, differences between books and other product types may merit future examination. The purchasing motivations of book customers, purchasing what may be classified as a luxury good, may differ from the motivations of more basic product types. Similarly their buying behaviors, reasons for returning the product, and expectations of return speed could differ from

[5] Indeed, some retailers like Amazon.com follow this practice, but in our conversations with industry executives, we have found that a large number of them do not have such a system in place.

purchasers of other product types such as clothing and electronics. It is possible, for instance, that electronics buyers may be even more sensitive to return speed given the short life cycle of those products. Further, books are usually smaller ticket items relative to other items sold online. According to the *Internet Retailer Top 500 Report* for 2011, the average dollar value of a transaction at an online book retailer was $79, while the same was $133 for apparel, and $339 for electronics. Thus, one could argue that the perceived "value at risk" with book retailers would be less than it would be other popular product categories. While we contend that these differences would likely amplify the observed effect rather than minimize it, the nature of that relationship is worthy of further consideration in future research. Hence is the nature of replication and extension, both of which are strongly encouraged in operations and supply chain management as well as throughout the business literature (Hubbard et al., 1998; Hunter, 2001). Despite the observed model results the current analysis should not serve as the "final word" on consumer response to returns management operations, and further empirical work regarding the value of returns operations to firm outcomes is merited.

Finally, a limitation of our study is how customer purchases were tracked in order to pair them with subsequent and prior purchases. We made use of login IDs to track returning customers and subsequent purchases. However, this gives rise to some complications; first, it is feasible that a customer may generate more than one login ID make purchases. Second, customers may choose to make purchases without logging in at all. While these purchases could have been captured by credit card details, this information was, understandably, not made available to us. However, there is reason to believe that this bias would be minimal, our focal retailer offers "reward points" for every purchase, therefore customers are incentivized to login and then make a purchase so that they can take advantage of the points. However, it is still a concern that we cannot completely ignore.

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