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An empirical analysis on the influence of risk on relationships between handling of product returns and customer loyalty in E-commerce

Ramakrishnan Ramanathan *

Operations Management Division, Nottingham University Business School, Jubilee Campus, Wollaton Road, Nottingham NG8 1BB, UK

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ABSTRACT

Using data from online customer ratings, we explore how the relationships between performance of companies in handling product returns and customer loyalty are affected by risk characteristics of products. Our results show that handling product returns plays an important role in shaping customer loyalty for low-risk products and also for high-risk products but not for products that exhibits medium levels of risk. These results have implications for website managers and development of reverse-logistics channels in the internet supply chains.

1. Introduction

Ability of an organization to attract and retain customers is vital to its success. Customer loyalty requires that there is a strong desire by the customer for a product, and that he has several product vendors to choose his product based on his preferences (Dick and Basu, 1994; Otim and Grover, 2006). It is often shaped by positive experience by the customer on his purchase. A number of factors contribute to the experience—convenience, availability of the product, delivery, returns policy, etc. Obviously, some of these factors are based on efficient performance of companies in managing product returns, and in fact these factors are more important in the e-commerce context since e-commerce typically experiences higher levels of product return compared to traditional retailing.

This paper focuses on the relationship between performance of companies in terms of managing product returns and customer loyalty in the context of the business-to-consumer (B2C) segment of electronic commerce. Customer loyalty has gained increasing attention in the context of e-commerce in the recent literature (Burt and Sparks, 2003). Several studies have stressed the importance of various operational factors in determining customer retention and loyalty and ultimately the success of firms (e.g., Collier and Bienstock, 2006). Some of these studies have also focused on the relationship between company performance and performance in handling product returns. Performance in terms of handling product returns has been either studied as a single factor or as a part of a set of operational factors.

Collecting products returned by customers is usually the first stage of organisational activities comprising the reverse-logistics channels or reverse-supply-chains. This first stage is important because customer encounters takes place only in this stage of the reverse-logistics systems. The current paper is an attempt to address some of the research questions in the reverse-logistics literature that can be specifically attributed to product returns and relate to some propositions developed by Prahinski and Kocabasoglu (2006) for further testing. We develop hypotheses on the relationships between performance of companies in terms of handling product returns and company performance, and test using data from online ratings. Company performance is captured using customer loyalty ratings. We use risk characteristics of products as moderating variables on the above relationships.

This paper is organized as follows. The next section provides a brief literature review of concepts relevant to this paper, starting with a review of the role of various operational factors (including those related to product returns) in shaping customer loyalty, reverse-logistics issues, studies that used data from online ratings, and, studies of risk and consumer behaviour in e-commerce context. The conceptual setting of the paper is provided in Section 3 where hypotheses are developed and the contextual framework of the paper is explained. Section 4 discusses the data and results of empirical analysis. Detailed discussions of the result of this study are provided in Section 5. Finally, Section 6 provides the summary and conclusions of this study along with limitations and scope for future research.

2. Literature review

2.1. Operational factors influencing customer loyalty in e-commerce

Customers use a variety of factors to judge the quality of a website involved in e-commerce activity (Collier and Bienstock, 2006). They could be broadly classified as pre-purchase factors

* Tel.: +44 115 846 7764; fax: +44 115 846 6341.
E-mail address: ram.ramanathan@nottingham.ac.uk

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and post-purchase factors. Performance in handling product returns is usually classified as a post-purchase factor.

2.1.1. Pre-purchase factors

Several pre-purchase factors need to be considered by e-commerce websites to ensure that a potential customer needing one of their products decides to make the purchase when they visit their website. Website browsing experience plays a very vital role in retaining the attention of a customer on a website. A good website should be easy to understand and use, and should have an intuitive design encouraging customers to gain experience through experimentation as they navigate the site. Site map, links for contact information, order tracking, helpful information on the technical aspects of selection (say for electronic products), online chat with a customer service representative, telephone enquiry, etc. are also useful. Additional flexibilities such as availability of different language options and ability to express the price in different currencies could add to global appeal. It would help if there is a separate link to support customers with information on enquiries, returns, order tracking, etc. after they completed their purchase.

Provision of appropriate and correct product information is also very important in deciding the quality of an e-commerce website. Regular updates are necessary for e-commerce sites to reflect the changing availability of products, changes to information, addition of new products and deletion of obsolete products. The obvious advantage of internet sites over brick-and-mortar store is the continuous 24/7 availability of the web-sites. This advantage should be ensured by minimizing unnecessary downtimes.

E-commerce websites should provide adequate privacy to the transacting customer. In addition, security of financial transactions is of critical importance. Some websites maintain their own secured sites to deal with the financial transactions (e.g., Tesco.com) but others use third party sites such as PayPal or Google checkout for the purpose. A very important requirement for credible financial transaction is the need to be certified by a web-assurance partner (e.g,. Verisign, TRUSTe, etc.; Odom et al., 2002).

2.1.2. Post-purchase factors

These set of factors are experienced by the customer after making payment. This involves the whole range of after-sales and support services.

Physical delivery is a very important component here. Significant sources of customer dissatisfaction arises either due to late arrival (or non-arrival) of the product, accuracy of the order and/or due to damaged products. The importance of quality of physical delivery in the "last-mile" of e-commerce has been stressed (Lee and Whang, 2001; Rabinovich and Bailey, 2004). A dedicated customer support team is necessary to deal with service failures, if and when they occur. A skilled team can turn a service failure into service delight by incorporating appropriate service recovery features. For example, a late delivery may be compensated using refunding the cost of delivery or using coupons that provide discounts in future purchases or fully refunding a faulty product.

Satisfactory procedures for handling product returns are important. The importance of these reverse-logistics arrangements is especially high in the e-commerce context, as product returns are typically much higher in e-commerce transactions than traditional brick-and-mortar transactions. E-commerce, especially the B2C segment, is typically characterised by large numbers of small order sizes and unusually large product returns (Cho et al., 2008). There are a large percentage of returns from internet shopping than traditional high street shopping mainly because sufficient information was not provided to internet customers at the time of purchase and the product is not physically seen at the time of purchase. As per AMR research, nearly 20% of approximately $96 billion online retails sales were returned to the retailers in 2003. According to a survey by bizrate.com, 89% of online buyers said return policies influenced their decision to shop with an e-retailer. The survey also found that the three leading e-commerce products returned were clothing (27%), computer software (20%) and books (15%). There should be adequate information in the website for dissatisfied customers to return their product. Thus, adequate arrangements to process the products returned by customers is an important factor in the competitive market.

Customers provide importance to the contents of the order. This includes receiving proper receipts for payment and documents, receiving all the items ordered and not receiving anything not ordered by the customer. Development of adequate reverse-logistics channels is also linked to this factor.

2.2. Reverse-logistics/reverse-supply-chains

As mentioned earlier, handling product returns is a part of the overall reverse-logistics channel or reverse-supply-chains of companies. The importance of this issue of reverse-logistics has been increasing over the last decade (Dowlatshahi, 2000; Guide and van Wassenhove, 2002; Srivastava, 2007; González-Torre et al., 2010; Olorunniwo and Li, 2010). Several methodologies have been used in the literature to identify the influence of performance of reverse-logistics/supply chains on financial performance (Sarkis and Cordeiro, 2001; Zhu and Sarkis, 2004; Kainuma and Tawara, 2006; Brown et al., 2008; Kumar and Putnam, 2008). Some of them have also studied product returns in e-commerce context (Choi et al., 2004; Disney et al., 2004). The current paper is an attempt to address some of the research questions related to reverse-logistics that specifically relate to product returns. For example, Prahinski and Kocabasoglu (2006) have recently highlighted ten research propositions in reverse-logistics, some of which are closely related to handling of returns: *Organizational commitment in the reverse supply chains* (*RSC*) *positively influences operational performance* (*Proposition* 1), *Service quality and recovery strategies influence satisfaction and dissatisfaction*, *which in turn influences repurchase intentions in the RSC* (*Proposition 3*), *Improved service quality in the RSC positively influences customer satisfaction* (*Proposition 3a*) *and Customer satisfaction in the RSC positively influences repurchase intention* (*Proposition 3b*). We attempt to test these propositions in this paper using online ratings of e-commerce customers to test these propositions.

2.3. Empirical studies using online ratings

The last few years have seen many research studies that attempted to empirically analyse online ratings. Heim and Sinha (2001) examined the relationship between customer loyalty and order procurement and fulfillment processes in the case of electronic retailers. They used data from the online rating site, www.bizrate.com. They identified three order procurement factors (website navigation, product information and price) and three order fulfillment factors (product availability, timeliness of delivery and ease of return) as significant in influencing customer loyalty. Thirumalai and Sinha (2005) have used online customer ratings from www.bizrate.com to identify the significance of order fulfillment factors (on-time delivery, customer support, order tracking and product met expectations) on customer satisfaction among various product groups—convenience, shopping and specialty. Using factor analysis and ANOVA, they found evidence that the importance of order fulfillment factors were different for specialty goods than for convenience goods or shopping goods. Otim and Grover (2006) studied online customer ratings from bizrate using ordinary least squares analysis to identify the effects of pre-purchase, transaction-related and post-purchase services on customer loyalty. They found

that post-purchase service factors (order-tracking support, on-time delivery and customer support) influenced customer loyalty significantly. Similar conclusions were made by Jiang and Rosenbloom (2005) using Bizrate data by employing structural equation modeling. Heim and Field (2007) provided a more in-depth study to understand the process drivers of specific e-commerce assessment factors (payment process, on-time delivery, ease of returns and refunds, privacy experience and customer support). Deviating from earlier studies, they chose to use data from another online rating site, www.epubliceye.com. Interestingly, they did not consider customer loyalty in their analysis. In the context of hotels, Ramanathan and Ramanathan (2011) have recently used online guest ratings to understand the drivers of customer loyalty.

2.4. Risk and consumer behaviour

While it has been recognized that perceived risk plays a very significant role in influencing consumer behaviour especially in e-commerce transactions, there does not seem to be many studies that analysed the impacts of risk. Massad and Tucker (2000) provided a comparative study online and offline (in-person) bidding behaviour. Following the classification of risk by Hofacker (2000), they proposed that price comparison risk was higher in in-person auction, while five other types of risk (time risk, vendor risk, security risk, privacy risk and performance risk) were higher in online environment. Miyazaki and Fernandez (2001) have found that perceived risks of online transactions might reduce with higher levels of internet experience. Doolin et al. (2005), using an internet based survey in New Zealand, found significant association of perceived risk and perceived benefits of Internet shopping with the amount and frequency of online purchases made. Lim (2003) has identified four sources of risk in relation to online shopping: technology, vendor, consumer and product. Lacohee et al. (2006) have found that online users carried out a personal risk assessment prior to engaging with a service. A detailed empirical testing on the behaviour of online consumers of auction environment has been provided by Finch (2007) based on risk classifications of Massad and Tucker (2000). He proposed that the risk exposure was determined both by the amount (price) paid and the degree to which a product could be accurately described (ambiguity). Using the dimensions of price and ambiguity to categorise products into different risk categories, he found that service-oriented quality dimensions were likely to be given higher importance for low risk categories and that product-oriented quality dimensions would get higher importance for high risk categories.

The above literature survey highlights an important gap. There are studies that attempted to analyse the relationship between several operational factors and customer loyalty and studies that attempted to study customer behaviour under various product groups. But, there are no studies that specifically related performance of companies in terms of their performance in handling product returns to customer loyalty over various product groups moderated using important product-specific characteristics. This paper is an attempt to fill this important research gap. We use risk as the moderating variable. Perceived risk plays an important role in shaping consumer behaviour (Hofacker, 2000) and is especially important with online customers (Doolin et al., 2005). Risk is a product-specific variable and varies based on the price and ambiguity of the product (Finch, 2007).

3. Contextual setting and hypotheses development

3.1. Hypothesis development

In our study, two performance variables are of interest.

(1) Performance of an e-commerce company in terms of how it handles product returns from customers and refunding them. This is evaluated using customer ratings in terms of product returns/refunds.
(2) Overall performance of the company, evaluated using customer loyalty ratings.

The focus of our study is the relationship between the two variables; how significantly related is the performance in terms of returns with overall performance. As mentioned in literature survey, identification of the influence of reverse supply chains (RSC) on operational performance is a hitherto untested research proposition (Prahinski and Kocabasoglu, 2006). More specifically, Prahinski and Kocabasoglu proposed that the influence of customer satisfaction in the RSC on repurchase intention should be tested. We consider the performance of companies in terms of product returns as a measure of commitment of these companies in ensuring customer satisfaction in the RSC, and develop the following hypothesis in line with this research proposition.

Hypothesis 1. Performance of e-commerce websites in terms of product returns will have significant impact on customer loyalty.

In addition, the literature survey in the previous section has highlighted that there are not many studies that tested the influence of risk on the relationships between product returns and customer loyalty. We also noted that Finch (2007) recently found that service-oriented quality dimensions were likely to be given higher importance for low risk categories and product-oriented quality dimensions would get higher importance for high risk categories. Factors related product returns are essentially service-oriented. Hence, in the absence of other specific studies on the impact of risk on these factors, we adapt the findings of Finch to the case of online ratings in terms of the following hypothesis.

Hypothesis 2. The significance of performance in terms of product returns on customer loyalty will vary depending on risk characteristics of products.

Hypothesis 3. The significance of performance in terms of product returns on customer loyalty will be higher for low-risk products.

3.2. Conceptual framework

Fig. 1 provides the conceptual framework of our analysis. We consider customer loyalty as an indication of the performance of an organization in winning a customer. This notion is consistent with similar studies in the literature (e.g., Heim and Sinha, 2001; Otim and Grover, 2006). We aim to identify the relationship between performance of websites in terms of product returns and customer loyalty. In line with previous studies on online risk, we conjecture that the relationship of performance in handling product returns with customer loyalty is moderated by risk characteristics of the products sold through the websites. We then attempt to verify the hypotheses mentioned above.

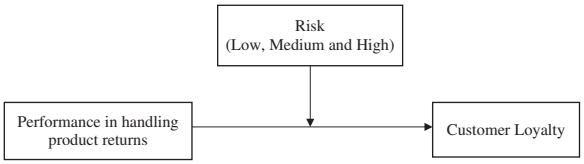

Fig. 1. Conceptual diagram of the moderating role of risk on the relationship between handling of product returns and customer loyalty.

4. Data and empirical analysis

4.1. Data

Data used in our analysis has been obtained from the online rating site, www.epubliceye.com, during 2006–2007. Features of this website and the suitability of data from this website for empirical analysis have been discussed in detail by Heim and Field (2007). This online rating site is a data infomediary service firm founded in 1996. Compared with other similar sites, this rating site contains a broader list of e-commerce assessment factors. The factors employed by epubliceye.com for rating e-commerce websites are listed in Table 1. They are collected from customers at several points of the shopping process—before and after purchase. Customers are asked to give rating 1 for very bad performance and 10 for very good performance in terms of the factors. The ratings are aggregated and normalized such that the highest rating is 1 for best performance. It may be noted that performance in terms of handling returns is mainly captured by epubliceye.com with only one factor, "Ease of Returns/ Refunds".

Ratings for a total of 1070 websites have been used in the study. Table 2 provides overall summary of the data. The rating on customer support has the largest spread of ratings with a website receiving a rating as low as 0.010. Many websites have received the highest possible rating of 1 in terms of on-time delivery, satisfaction with claims, customer support, payment process and

Table 1
Definitions of e-commerce assessment factors and customer loyalty from www.epubliceye.com.

Factor	Detail	Description
Dependent variable		
Customer loyalty	Customer loyalty	This category allows consumers to indicate their likelihood of shopping with the merchant again. The resulting rating is merchant's trend of customer loyalty.
Operational factor related to product returns		
Ease of returns/refunds	Ease of returns	This category allows consumers to rate the returns and refund practices of the business. Did the company handle returns as promised? The resulting rating is merchant's trend of ease of returns.
Other operational factors—post-purchase		
On-time delivery	On-time shipping and delivery	This category allows consumers to rate the fulfillment practices of the merchant. Was the product in stock? did it arrive in the time period promised? Was the service delivered on schedule? The resulting rating is merchant's trend of order fulfillment.
Satisfaction with claims	Customer's experience with advertising and product claims	This category allows consumers to rate their experience with the reliability of the advertising and product claims made by the merchant. Based on customer experience, did the product or service do what it promised to do?
Customer support	Customer support and follow up	This category allows consumers to rate how well the merchant stands behind their product or service after the sale. The resulting rating is merchant's trend of customer support.
Other operational factors- pre-purchase		
Management accessibility	Customer service accessibility	This category allows consumers to rate how easily they were able to contact management or someone in charge with inquires or problems that required live support. The resulting rating is merchant's trend of management accessibility.
Payment process	Customer's billing and payment experience	This category allows consumers to rate their satisfaction with how their order was processed. The resulting rating is merchant's trend of satisfied customer transactions.
Comparative prices		An explicit definition not available in the website
Privacy experience	Customer's privacy experience	This category allows consumers to rate their experience with the privacy practices of the business relative to their privacy policy. Was the company's handling of your personal information acceptable to you? The resulting rating is merchant's trend of honouring its privacy policies based solely on customer experience.

Table 2
Descriptive statistics and correlations[a] for the overall data (Total number of websites 1070).

	Customer loyalty	Ease of returns/ refunds	On-time delivery	Satisfaction with claims	Customer support	Management accessibility	Payment process	Comparative prices	Privacy experience
Customer loyalty	1								
Ease of returns/ refunds	0.626	1							
On-time delivery	0.628	0.468	1						
Satisfaction with claims	0.893	0.658	0.621	1					
Customer support	0.839	0.665	0.634	0.859	1				
Management accessibility	0.848	0.658	0.654	0.856	0.903	1			
Payment process	0.826	0.598	0.649	0.842	0.810	0.844	1		
Comparative prices	0.508	0.446	0.424	0.554	0.476	0.51	0.565	1	
Privacy experience	0.753	0.547	0.594	0.693	0.685	0.733	0.802	0.509	1
Minimum	0.42	0.333	0.167	0.493	0.010	0.237	0.567	0.743	0.487
Maximum	0.999	0.999	1.000	1.000	1.000	0.999	1.000	0.999	1.000
Mean	0.942	0.929	0.896	0.943	0.926	0.931	0.945	0.941	0.923
Standard deviation	0.073	0.102	0.149	0.065	0.107	0.086	0.053	0.036	0.056

[a] All correlations are significant at the 0.01 level (2-tailed).

privacy experience. Mean ratings are all above or close to 0.9. All the factors have significant correlations with each other. Such high correlations could lead to the problem of multi-collinearity in the regression analysis. We in fact have faced some problems and we have explained our experience in dealing with this problem in Section 4.3.

4.2. Risk characterizations

As mentioned earlier, risk in our case is defined in terms of the general price of the product and the level of ambiguity associated with the product. This definition of risk is in line with similar studies in the literature (Finch, 2007). Finch (2007) used four product categories to represent the combination of low and high levels of price and ambiguity: "electronics and computers/consumer electronics/PDAs" for low price and low ambiguity, "electronics and computers/computers and office/laptops" for high price and low ambiguity, "coins/coins:US/Lincoln Wheat 1909–1958 and coins/coins:US/Lincoln Memorial 1959-now" for low price and high ambiguity, and, "coins/coins:US/gold" for high price and high ambiguity. Thus, collectible (coins) represented the high ambiguity segment because they were sold in various conditions that played a critical role in determining value. Finch (2007) chose to classify computers and electronic products in low ambiguity segment arguing that the buyer would have a clear description of the product and would know precisely what the product was.

We followed a similar approach in this study. Our approach was to identify websites selling high priced products that also have high degree of ambiguity in product specification. We totally considered websites selling seven different product groups in our analysis. We classified computers, automobiles, electronic equipment, sporting goods, vehicles and books as low ambiguity products because they are usually sold as per specifications. In line with the choice of Finch (2007) for high ambiguity items, we have classified collectibles as high ambiguity items. The service management literature claims that services are inherently heterogeneous (Fitzsimmons and Fitzsimmons, 2008) and hence cannot be precisely specified in e-commerce websites. Hence we classified services as high ambiguity items. Price information is not explicitly available, but with the exception of books, all the remaining six product groups are generally high priced items.

We then categorised high price and high ambiguity products as high-risk items. Low price and low ambiguity items are classified as low-risk items, while all other products are classified as medium-risk items. Of the 1070 items, 157 items have been classified as high-risk, 698 as medium-risk and the remaining 215 items have been classified as low-risk items.

We now describe our analysis to identify the influence of risk characteristics of products on the significance of efficient handling of product returns in maintaining customer loyalty.

4.3. Empirical analysis

We use multiple ordinary least squares regression analysis for testing Hypotheses 1–3. We first carried out the usual tests to check whether the assumptions of regression are valid for the data. We tested for normality assumption of the error terms, checked for the presence of outliers in the data and checked for multi-collinearity and heteroskedasticity. Initially, some of our regression results showed evidence of multi-collinearity with the variable representing customer support showing variable inflation factor (VIF) (=12) above the acceptable limit of 10 (Hair et al., 2006). Since this variable is not the variable of interest in this study, we eliminated this variable from the analysis. The regression without customer support showed acceptable levels of multi-collinearity with VIF well below the recommended limit of 10. We further verified and found that all other assumptions for regression are satisfied. We verified that exclusion of this variable did not change the significance level associated with the variable of interest in this study, namely, ease of returns/refund. Results of the multiple regression analysis are presented in Table 3. In the regressions shown in Table 3, customer loyalty rating is the dependent variable and rating in terms of product returns/refunds is the independent variable. Ratings in terms of other performance criteria (such as management accessibility and on-time delivery) are used as control variables in these regressions.

Second column of Table 3 provides results of multivariate regression for all the 1070 variables. Overall results of this regression (adjusted $R^2=0.843$ and the F-statistic) are acceptable. However, "ease of returns/refunds" has not been found to be significant. Thus, our results show that performance of e-commerce websites in handling product returns is not significant in explaining customer loyalty. This result does not support Hypothesis 1.

Other columns of Table 3 provide results with products with different risk characteristics. Results show that the performance in terms of product returns/refund of a website is significant (at 0.1 level) in explaining customer loyalty for websites selling low-risk as well as for websites selling high-risk products. This factor is not significant for websites selling products with medium levels of

Table 3
Multiple regression analysis across risk categories (Dependent variable: Customer loyalty).

	All	VIF	Low-risk	VIF	Medium-risk	VIF	High-risk	VIF
Independent variable:								
Ease of returns/refunds	0.004	1.915	0.035*	1.365	−0.009	2.063	−0.037*	1.338
Control variables:								
On-time delivery	0.014*	1.895	0.005	1.482	0.017	1.989	0.042***	1.727
Satisfaction with claims	0.645***	4.949	0.704***	3.137	0.667***	5.452	0.456***	3.020
Management accessibility	0.156***	5.165	0.072*	3.413	0.170***	5.489	−0.003	3.131
Payment process	0.037	5.696	−0.072	3.655	−0.039	7.440	0.274***	2.226
Privacy experience	0.255***	2.990	0.173***	2.014	0.317***	3.752	0.068**	1.624
Comparative prices	−0.068**	1.557	−0.141***	1.535	−0.038	1.649	−0.002	1.539
Constant	−0.035		0.219***		−0.072**		0.200***	
No. of observations	1070		215		698		157	
R^2	0.844		0.779		0.852		0.825	
R^2 adj.	0.843		0.771		0.850		0.817	
F statistic	818***		104***		566***		100***	

* $p<0.10$.
** $p<0.05$.
*** $p<0.01$.

risk. We consider these results as significant findings of our study. Thus, performance of e-commerce websites in terms of product returns/refund influences customer loyalty for websites selling products with low as well as high levels of risk. For product groups with medium levels of risk, performance in terms of product returns does not have significant influence on customer loyalty.

Hypothesis 2 is supported in this study since we found that significance of performance in terms of product returns vary depending on risk characteristics of products (significant for low-risk and high-risk products and not-significant for medium-risk products). Hypothesis 3 is partially supported; while our study found that the significance of performance in terms of product returns on customer loyalty is higher for low-risk products, we also found that this factor is significant for high-risk products too. This result is somewhat comparable to the findings of Finch (2007) who found that service-specific factors (that includes product returns) were important only for low risk groups.

5. Discussion

The most important result emerging from our study is the significance of performance in terms of product returns in explaining customer loyalty for websites that sell low-risk products and for website that sell high-risk products. This result is also similar to that of other related studies though risk considerations were absent in any of the previous studies. Jiang and Rosenbloom (2005) found strong relationship between "after-delivery satisfaction" (that includes performance on product returns) and customer loyalty. Similar set of factors has been recognized by Heim and Sinha (2001) as important determinant of customer loyalty for electronic goods.

It is interesting to note that while "ease of returns/refunds" is significant for websites selling low-risk products and for website selling high-risk products, the sign of the coefficient is different for the two groups—the sign is positive for low-risk products while it is negative for high-risk products. This change in sign could provide clues to the product-return behaviour of customers dealing with low-risk and high-risk products.

Customers tend to purchase products with low-risk (low-price and low-ambiguity) without much detailed analysis since the products are less expensive and usually websites offer hassle-free returns policies if returned within certain period. Most of the product returns in this category tend to happen because of change of mind on the part of customers. Thus, customers who were happy that they could return the products without problems tend to purchase more from the company and hence show more customer loyalty. This behaviour is brought out in our results since the factor "ease of returns/refunds" has a positive sign for low risk products.

On the contrary, customers usually spend much more time and effort in knowing about the product before purchasing high-risk (high-price and high-ambiguity) products. Hence, the most likely reason for returning the product would be some real issue with the product such as delivery of wrong product or non-working product. Thus, returns of high-risk products happen because customers are not satisfied with the product (rather than change of mind). Hence, customers who return high-risk products may not show high customer loyalty though they may be satisfied with the handling of returns. This behaviour is shown by the negative sign for this factor for high-risk products. This negative sign could mean absence of sufficient level of service recovery features that ensures that a dissatisfied customer is converted to a happy customer.

Ability of organizations in handling product returns is critically dependent on the coordination of its supply chain partners, and on the availability of adequate reverse-logistics channels. Hence, our findings support higher importance to be associated to supply chain functions in organizations that sell high-risk (high-price and high-ambiguity) products and in organizations that sell low-risk products. Strategies such as logistics outsourcing via 3PL may be considered as possible options. The results of our study stress the need to strengthen reverse-logistics and reverse-supply-chain activities of organizations to stay ahead of competition, and especially for websites selling low-risk or high-risk products. The results support the general belief that organizations need strong reverse-logistics capability to stay ahead of competition.

6. Summary and conclusions

The Literature provides studies on the important role played by proper handling of product returns in ensuring customer satisfaction and their repeat shopping in e-commerce context. However, there is no study that has analysed the influence of risk on this role. We have provided the risk perspective in this paper. We have categorised websites in terms of the risk characteristics (low-, medium- and high-risk) of the products sold through them and analysed the importance of proper handling of product returns on customer loyalty using online customer ratings. We have used data on ratings by customers of 1070 websites. Using multiple regression analysis, we have found that performance of companies in handling product returns plays an important role in influencing customer loyalty for websites that sell low-risk or high-risk products.

The results found in the analysis of this paper are similar to several previous multivariate analysis studies, and have much managerial significance. Our study has implications for both the managers of websites and also for logistics service providers (LSP) that help handle product returns. Managers of e-commerce websites should ensure that the returns policy of the web-site is clearly specified before customers decide to purchase from them. They should also ensure adequate arrangements are in place for smooth product returns, either in-house or outsourced. For logistics service providers, our study provides good scope for their future. By providing efficient service, LSPs can partner in the reverse-supply-chain activities of e-commerce websites. Unlike the traditional form of commerce where LSPs are visible to only companies, e-commerce will make them more visible to the ultimate consumer.

We believe that the analysis presented in this paper contributed to the literature by providing a risk perspective to existing studies that analysed the relationship between performance of companies in handling product returns and firm performance. However, we believe that there is scope for further improvement. A limitation of our study is that it considered only ease of returns/refunds as the indicator. While it is a reasonable indicator, product collection is the first stage in the reverse-logistics channel. More constituents of reverse-logistics or reverse-supply-chains can be considered, including inspection/sorting, remanufacturing, inventory management, information technology support, etc. (Srivastava, 2007; Östlin et al., 2008). We restricted our analysis only to risk considerations but more experiments on different product groupings are possible. When demographic, geographic and psychographic details of consumer are available, a more targeted analysis (Jelassi and Enders, 2008) is possible. For example, males, who generally do not enjoy shopping at a physical store, are said to prefer online shopping. This issue and many other issues can be attempted when such additional data on customer is collected by online rating firms and made available in public domain. Finally, we have used customer loyalty as an indicator of performance of companies in winning a customer. More direct measures of performance, such as financial performance, could be considered.

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