



Customer segmentation based on buying and returning behaviour

Klas Hjort

Swedish School of Textiles, University of Borås, Borås, Sweden

Björn Lantz and Dag Ericsson

School of Engineering, University of Borås, Borås, Sweden, and

John Gattorna

*University of Technology, Sydney (UTS), Sydney, Australia and
S P Jain School of Global Management, Singapore*

Abstract

Purpose – The purpose of this paper is twofold: first, to empirically test whether a “one size fits all” strategy fits the fashion e-commerce business and second, to evaluate whether consumer returns are a central aspect of the creation of profitability and, if so, to discuss the role of returns management (RM) in the supply chain strategy.

Design/methodology/approach – Transactional sales and return data were analysed and used to categorise customers based on their buying and returning behaviours, measuring each customer’s net contribution margins.

Findings – The e-commerce business collects a vast quantity of data, but these data are seldom used for the development of service differentiation. This study analysed behaviour patterns and determined that the segmentation of customers on the basis of both sales and return patterns can facilitate a differentiated service delivery approach.

Research limitations/implications – This research empirically supports the theory that customer buying and returning behaviours can be used to appropriately categorise customers and thereby guide the development of a more differentiated service approach.

Practical implications – The findings support a differentiated service delivery system that utilises a more dynamic approach, conserving resources and linking the supply chain and/or organisational strategies with customers’ buying and returning behaviours to avoid over and underservicing customers.

Originality/value – Consumer returns are often viewed as a negative aspect of doing business; interestingly, however, the authors revealed that the most profitable customer is a repeat customer who frequently returns goods.

Keywords Strategy, E-commerce, Supply chain management, Buying behaviour, Customer segmentation

Paper type Research paper

Introduction

In shifting market conditions, the choice of supply chain strategies is a critical aspect of competing to serve customers (Gattorna, 2010). It is accepted in theory that the “one size fits all” approach to supply chain design is no longer valid (Christopher *et al.*, 2006; Gattorna, 2010; Ericsson, 2011; Godsell *et al.*, 2011). However, even in the highly competitive e-commerce market, organisations still utilise a “one size fits all” strategy



to create and deliver value to their consumers, thereby implicitly assuming that consumers' demands and buying behaviour are homogeneous and, therefore, that there is no profitable reason to differentiate delivery in terms of service.

However, the buying behaviours of e-commerce consumers are not homogeneous, especially in the fast-moving consumer goods (FMCG) business. FMCG organisations compete not only on the basis of products and price but also across a large variety of services. For instance, accessibility and rapid delivery are critical determinants of success. Returns management (RM) is clearly an aspect of the consumer experience; if handled properly, RM can decrease a firm's costs while simultaneously increasing its revenue and serving as a vehicle for generating competitive advantages. The total offer is called the "value package" and consists of the physical product and the services surrounding this product. Certain services are the order qualifiers, whereas others services are the order winners (Ericsson, 2011).

If customer groups exist with different service requirements, then it is eminently reasonable to attempt to match these groups with differentiated supply chain strategies (Godsell *et al.*, 2011). Gattorna (2010) argues that organisations, particularly with respect to supply chains, must not only comprehend competitive forces but also understand their customers' buying behaviours. Furthermore, organisations need to discover appropriate methods of internally utilising their knowledge to offer and deliver suitable value propositions to their consumers. In e-commerce, this consideration has implications for service delivery as well as for the sourcing of products and thus impacts supply chain design. In particular, with respect to the design of supply chains, Godsell *et al.* (2006) express the need to shift the focus from the product to the end-customer and specifically towards addressing the end-customer's buying behaviour. Traditionally, there are two different schools of thought in supply chain design (Godsell *et al.*, 2011). The first theory is the lean-agile supply chain design, which is product-driven. The second perspective is based on the notion that strategic alignment is driven by customer buying behaviours. Both approaches take a supply chain approach; thus, neither of these theories adopts this research study's focus on the consumer or the end-user.

The strategic alignment approach focuses on customer behaviour, but still from the supplier point of view. What we are trying to do is to really "get into the shoes" of the consumer and view everything from her/his point of view. The consumers' demand, needs, wants and buying behaviour is the starting point and launching pad for the efforts. In a way, this puts the chain "upside down" by designing the chain "bottom up". There has been a lot of discussions regarding this type of customer or consumer focus, but little has been done in practice. Implementation is the main thrust of the "School of Demand Chain Management" as it is developing at the University of Borås. In certain new companies, such as Nelly.com, this can be done as a green field approach, as we are doing here. In most cases, however, existing flows, processes and routines have to be reengineered adapted and adjusted (Ericsson, 2011).

Supply chains are omnipresent (Gattorna, 2010), and e-commerce organisations exist in many supply chains or supply networks. As noted earlier, it is accepted that the "one size fits all" approach to supply chain design is no longer valid, and the suggested number of parallel supply chains is inherently variable and context-dependent. In particular, this number depends upon diverse factors, such as demand uncertainties, product characteristics and replenishment lead-times, among others. Traditionally, the literature

describes supply chain design from a manufacturer's perspective, attempting to link the supply side with the demand side, often with a product focus (Croxtton *et al.*, 2001; Christopher *et al.*, 2006). In e-commerce, the focus of supply chain design would naturally adapt to the nature of the e-commerce organisation, which shifts this focus from manufacturing towards the sourcing and delivery of finished goods. However, as e-commerce organisations grow, they are likely to attempt to design and produce their own products and brands in search of greater profit margins, thereby shifting the supply chain focus back towards manufacturing (or at least a combination of sourcing and manufacturing). This situation illustrates the need for at least two supply chains, and likely even more. In e-commerce, the critical focal point is to match the demand from consumers with an appropriate set-up of sourcing, final distribution and returns-handling activities. If demand variations for different products exist, it is likely to be useful to apply diverse sourcing strategies to match the demand uncertainties with responsive supply strategies. Gattorna (2010) argues that in a typical supply chain, three to four dominating customer buying behaviours exist that must be understood in detail. Furthermore, these dominating behaviours account for approximately 80 per cent of a firm's customers, and the same dominating patterns will fit other markets as well.

Christopher *et al.* (2011) explain the need for combining both product characteristics and market considerations during the design of supply chain capabilities and the selection of supply chain pipelines. In the selection of pipeline types, there are eight theoretical options that can be chosen, depending on whether the products are standard or specialised, whether the demand is stable or volatile, and finally, whether the replenishment lead-time is short or long (Christopher *et al.*, 2006). According to Christopher *et al.* (2006), standard products tend to be more stable in demand with longer life cycles, whereas specialised products tend to demonstrate the opposite characteristics, i.e. erratic demand and shorter life cycles. Therefore, there is a connection between demand predictability and product characteristics, which reduces the number of theoretical pipeline types to four (Christopher *et al.*, 2006, p. 282). Based on product demand and supply characteristics, these authors address supply chain approaches that are lean, agile or a combination of these two traits, i.e. leagile (Christopher *et al.*, 2006, p. 283).

In many markets, especially the e-commerce market, in which several organisations are competing by selling the same brands and/or similar products with very limited price differences, it is difficult to maintain a competitive edge through the product itself (Christopher, 2005). Therefore, the service level and the delivery service become critical determinants of market success. The e-commerce supply chain often appears, in theory and practice, to be a one-dimensional chain. However, in reality, it is a spaghetti bowl of interrelated activities or processes that source thousands of stock keeping units (SKU), receiving, storing, picking, packing and distributing these units to the end-user and subsequently receiving and handling consumer returns. In the e-commerce business, especially in fashion, delivery from stock to consumers makes it difficult to apply the lean/agile approach for the final distribution. However, the buying and returning behaviours of customers might affect a firm's profitability if these behaviours are not matched with a suitable delivery and return strategy.

In the fashion e-commerce business, a trend towards more liberalised delivery and return conditions has become evident. This trend represents a method of coping with competition inside the industry and a means of attracting new consumers from the

traditional retail chains. Consequently, return policies are an aspect of marketing practice (Autry, 2005), and therefore RM is certainly an aspect of the value creation process. RM is the portion of supply chain management that includes returns, reverse logistics, gatekeeping and avoidance (Rogers *et al.*, 2002, p. 5). Mollenkopf *et al.* (2011) investigate the marketing/logistics relationship with respect to RM. These researchers found that the effectiveness of RM was enhanced if firms coordinated their strategic and operational activities. Clearly, RM must be efficient; in certain instances, however, it appears that RM is not only an aspect of value recovery but also a vehicle for value creation. Stock and Mulki (2009) emphasises that product returns will continue to be a facet of business operations, and the extant literature indicates that competition is increasing; consumer demands are certainly following this development. Therefore, there is a need to align RM within the supply chain strategy because the entire supply chain must operate efficiently and effectively; returns are no exception to this requirement (Stock and Mulki, 2009).

The goal of changes to delivery and return conditions is to attract and create loyal and repetitive customers, thereby increasing sales. However, a liberal return policy increases returns (Wood, 2001). Moreover, there is no direct correlation between increasing sales and maximising profitability. Differences in service requirements might affect both sales and profitability. If a “one size fits all” strategy is utilised correctly, one would expect to find a uniform behavioural response from consumers, i.e. there should be no grouping in analyses of consumers’ loyalty in terms of repetitiveness or consumers’ profitability in terms of contribution margins.

This study sought to characterise customer segments in terms of buying and returning behaviour as a starting point for grouping customers and their responses to a “one size fits all” approach. If there are considerable differences in how customers behave, then these differences should be investigated in greater detail and their implications with respect to product characteristics and the sourcing of finished goods should be analysed. Gattorna (2010) indicates that the most critical point to start from, particularly in the context of e-commerce businesses, is the buying behaviour of customers, focusing on the sourcing of finished goods and the delivery of these goods from a firm’s stocks. Segmentation is a well-established concept (Gattorna, 2010; Christopher *et al.*, 2011), and a number of different methods for segmentation are quite widespread (for reviews of traditional segmentation techniques, please see Bonoma and Shapiro (1984) and Cooil *et al.* (2008)). The identification of segments, regardless of the segmentation technique that is used, indicates a need for a differentiated product and service delivery approach and the necessity of abandoning the old and outdated “one size fits all” approach.

The design of an appropriate supply chain should mirror the demand-side requirements; in e-commerce, this mirroring entails delivering the appropriate product and service to the consumer/end-user. If differences exist in how customers respond to a “one size fits all” strategy, then it is logical to increase the understanding of customer buying behaviour. Gattorna (2010, pp. 62-63) presents five different ways to perform behavioural segmentation. These methods would likely be effective, although they are rather time consuming. Often, the literature presents business techniques that have been developed for business-to-business (B2B) customers. In the rapidly evolving field of business-to-consumer (B2C) e-commerce, the fifth method by which Gattorna (2010) creates consumer insight, which uses point-of-sales (POS) data and sophisticated data

mining techniques, could be employed. However, e-commerce businesses maintain a vast amount of transactional data that could be used to segment the consumers on the basis of their behaviour. These data could be used to segment consumers based on their buying and returning behaviours, measuring their net contributions. A “one size fits all” supply chain strategy inherently assumes that there is one large segment of customers in the market with the same requirements and demands for products and services. It is assumed that the members of a homogeneous customer group with the same requirements and demands will share similar buying behaviours.

Organisations perform a vast number of different activities and procedures, including the delivery and return processes. These activities drive costs that affect the prices that are charged for products and services. In addition, these activities are interpreted differently by various types of consumers, i.e. different consumers will attach distinct levels of importance to particular activities. Therefore, performing activities better or more efficiently might result in a competitive advantage (Porter, 1996). Performing different activities than competitors might also result in a competitive advantage; however, this type of differentiation is not necessarily cost-dependent because it might deliver a value advantage. According to Porter (1996), differentiation arises from a choice of activities and from the ways in which organisations perform these activities. In the rapidly growing e-commerce business, and especially in fashion, the competition is quite fierce. The importance of delivery and return policies is dependent on which products e-commerce consumers are purchasing. For example, non-adopters or new customers might hesitate to purchase products that could readily generate fit and size problems, such as shoes or certain non-flexible garments. Certain companies in the shoe business (Zappos.com, Brandos.se, and Heppo.se) are truly generous and offer all customers (or in the case of Zappos, only domestic customers) both free delivery and free returns. This policy is an indication that these companies perceive the delivery and return conditions to be critical to their business. However, even in these examples, the strategy is “one size fits all”, and these companies are therefore likely to over-service certain customers (Gattorna, 2010). Overservicing is costly and will affect profitability, and customers who misuse this service will increase the costs that will have to be paid by all customers, including customers who do not return their purchases. Misuse occurs when the liberal delivery and return policies affect a consumer’s buying behaviour, e.g. when a customer orders shoes in more than one size because returns are free. In the global retail industry, companies are likely to perceive the surrounding complexity but attack it with an operational sledgehammer (Gattorna, 2010). It might be easier and cheaper to deliver only one service level to all customers; however, this approach is not the most profitable, as it will undoubtedly under or overservice certain customer groups.

Traditionally, organisations have viewed commercial product returns as a nuisance (Blackburn *et al.*, 2004; Guide and Van Wassenhove, 2006), considering returns to be a necessary evil, a painful process, a cost centre and an area of potential customer dissatisfaction (Stock *et al.*, 2006). However, more recently, organisations have realised that effective RM can provide a number of benefits, such as improved customer service, effective inventory management and product dispositioning (Norek, 2002; Rogers *et al.*, 2002; Stock *et al.*, 2006; Mollenkopf *et al.*, 2007a, b; Frankel *et al.*, 2010; Mollenkopf, 2010). If organisations view returns as a cost driver rather than as an

opportunity to obtain a competitive advantage, they will neglect the potential value RM could provide to them and their customers (Mollenkopf *et al.*, 2007a). From a consumer's perspective, online purchases represent a certain level of risk (Mollenkopf *et al.*, 2007b) with respect to product quality, size and fit issues. Moreover, the customer must await purchase delivery and the execution of service delivery. Mollenkopf *et al.* (2007b) argues that a well-executed handling of returns could act as a service recovery opportunity in which the customer evaluates the ongoing service delivery during a particular purchase experience. According to Andreassen (2000), service recovery affects customer loyalty. This reasoning also follows the arguments of Harrison and Van Hoek (2008), who state that service performance is important because customers' perception of the delivered products and services engenders loyalty. Thus, the importance of RM in distance sales should not be underestimated. RM has started to assume a strategic role in organisations (Rogers and Tibben-Lembke, 1999). However, it is now time to position RM in its proper place in the supply chain strategy.

This paper views the segmentation of customers based on their buying behaviour as the starting point and driver for supply chain strategies. Globalisation has reduced consumers' behavioural homogeneity within countries and increased commonalities across countries (Broderick *et al.*, 2007). This change facilitates the development of global strategies targeting similar segments in different countries. In a consumer context, behavioural homogeneity addresses the decision-making processes that lead to a purchase decision, and this concept is used to predict and explain market segment responsiveness (Broderick *et al.*, 2007). Hoyer (1984) investigated consumer decision processes regarding repeat purchases, and Broderick *et al.* (2007) used this concept in their study of consumer behaviour. They performed a survey that used questions such as "How often do you purchase?" to analyse behavioural homogeneity. Asking questions regarding future purchase behaviour and/or historical return behaviour will likely produce a bias, as one can evaluate how questions and answers are interpreted as well as the accuracy of the responses. It is possible that respondents say one thing and then do another (Alreck *et al.*, 2009). Moreover, there are additional problems associated with attempting to foresee the future and/or recall the past. Attempts to observe customers' behaviour online presents other methodological issues, especially when considering post-purchase behaviour, given that certain decisions, such as whether or not to return a purchased item, might involve continuous rather than discrete processing (Hoyer, 1984). Any data tend to be an historical snapshot of a studied phenomenon. In this case, consumers are a moving target in a continuously changing environment that is increasingly competitive and has created an increased focus on service delivery. Kim and Kim (2004) investigated customers' purchase intentions for clothing and noted that their conclusions might remain valid over the course of time, given the rapid development of e-commerce. In the fast-moving, global e-commerce business, it is likely difficult to predict and/or explain consumer behaviour using any type of data. However, customer (consumer) insight can be created using transactional data, and according to Gattorna (2010), the use of behavioural data alongside transactional data makes it possible to more accurately predict customer behaviours. Transactional data, including purchase and return behaviour, can therefore be useful in customer segmentation. The utilisation of actual purchase and return data to reveal how customers behave regarding delivery and return policies reduces certain methodological issues regarding data collection, i.e. perceptions about

the future or remembrances of the past. The purchase and return data track buying behaviour over time (not a snapshot) and should therefore result in fewer validity problems because they measure and follow (if the data are updated) real behaviours instead of intentions or perceptions.

With respect to the design of supply chain strategies, the literature reports, from a manufacturer perspective, that “one size fits all” is no longer valid, and further, that organisations and supply chains must be aligned with consumers’ buying behaviour (Gattorna, 2010). Stock and Mulki (2009) argue for the importance of RM within supply chains, as returns are likely to continue to be a part of business operations. Consumer returns are a central aspect of e-commerce market operations. The overarching hypotheses for this paper are first, that the “one size fits all” strategy does not fit the fashion e-commerce market (Christopher *et al.*, 2006; Gattorna, 2010; Ericsson, 2011; Godsell *et al.*, 2011); and second, that RM is a central part of the supply chain (Autry, 2005; Stock and Mulki, 2009; Mollenkopf *et al.*, 2011) and should be aligned with consumer buying behaviours in the design of supply chain strategies. Therefore, the purpose of this paper is twofold: first, to empirically test whether a “one size fits all” strategy is appropriate for the fashion e-commerce business; and second, to evaluate whether consumer returns are a central aspect of the creation of profitability, and if so, to determine the role of RM in the overall supply chain strategy.

Research design, method and measurement

Designing supply chain and organisational strategies in the FMCG business, especially within fashion e-commerce, requires a profound understanding of customer behaviours and requirements. Therefore, the development of supply chain strategies must be both context-specific and close to the competitive environment, and accordingly, it is appropriate to use a single-case design to test the well-known “one size fits all” theory. To test the overarching hypotheses presented in the previous section, one must select a case organisation, determine a unit of analysis and collect and assess data. The case organisation, Nelly.com, was selected primarily because it fit the purpose of testing specific theories, i.e. this organisation did not segment its customers or differentiate its offerings to customers in terms of products or services. Furthermore, the organisation was willing to support the research with transactional data for the purposes of testing the aforementioned theory on the organisational and customer levels. For the quantitative analysis, Nelly.com exported transactional data from their ERP system. The data contained all (502,429) of its orders for a period of two years (2008-2009) across their four markets in Denmark, Finland, Norway and Sweden. Because the analysis was performed on a customer level, the authors performed detailed calculations to reveal various aspects of each customer’s behaviours, including the customer’s order sales figures, return figures and contribution margin. Thereafter, each customer was analysed in terms of total sales, average sales per order, total contribution margin, average contribution margin, total number of orders, and total number of returns. The organisation’s operations manager was interviewed on site during the research and supplied the researchers with vital information regarding freight costs, return freight costs and costs that were related to the handling of orders and returns.

To test the hypotheses in terms of construct validity, the financial contributions of customers were categorised according to their buying and returning habits. Customers were categorised as either repeat or non-repeat customers depending on

whether they made only one purchase or several purchases during the examined period. They were also categorised as either returners or non-returners, depending on whether they returned at least one item during the period in question. Using this perspective, four different types of customers emerged, and they were categorised as Types A-D (Table I).

Differences in contribution per order and contribution per customer and year among the four types of customers were described on a country basis and were further analysed using two-way ANOVAs. Tables II and IV present the mean values of customers' contribution per order in Swedish currency units (SEK). The mean value (mean), standard deviation (SD) and number of orders (n^*) in thousands are presented as a function of returning habits (RH) and buying habits (BH), as discussed in Table I.

Results

Contribution per order

Table II presents descriptive statistics regarding the contribution per order for all four countries.

Two-way ANOVAs were conducted on the data for all four of these countries to explore the observed differences in contribution per order in greater detail. Table III presents the ANOVA for the Swedish subsample (the significant patterns are again identical for all four of the examined countries).

Repeat customers and non-returners generate a significantly higher contribution per order ($F = 1,441, p < 0.001$ and $F = 2,755, p < 0.001$, respectively). There is also a significant interaction effect between the examined factors ($F = 1,443, p < 0.001$). For non-returners, repeat customer status does not significantly impact the contribution

		Returning habits (RH)	
		Non-returner (0)	Returner (1)
Buying habits (BH)	Non-repeat customer (0)	Type A	Type B
	Repeat customer (1)	Type C	Type D

Table I.
The four types of customers

BH	RH	SWE			NOR			DK			FIN		
		Mean	SD	n^*	Mean	SD	n^*	Mean	SD	n^*	Mean	SD	n^*
0	0	327	356	80	559	523	23	438	414	15	376	385	12
	1	157	339	19	349	637	4	238	417	3	220	362	4
	Total	295	359	98	525	549	27	406	421	18	339	386	16
1	0	327	272	29	571	413	8	440	313	4	385	309	4
	1	300	317	37	513	430	7	392	324	3	338	291	5
	Total	312	298	66	544	422	14	418	319	7	358	300	9
Total	0	327	336	109	562	497	30	439	396	19	378	368	16
	1	253	331	56	448	528	11	318	380	6	287	329	9
	Total	302	336	165	532	508	42	409	396	25	346	358	25

Note: The number of orders n^* is provided in thousands

Table II.
Contribution per order

per order. By contrast, returners generate significantly higher contributions per order if they are also repeat customers.

Total contribution per customer and year

Table IV presents descriptive statistics regarding the total contribution per customer and year for all four of the examined countries. Note that the values for non-repeat customers are the same as in Table II.

Two-way ANOVAs were conducted on the data for all countries to explore the observed differences in total contribution per customer and year in greater detail. Table V presents the ANOVA for the Swedish subsample (the significant patterns are again identical for all four countries).

The fact that repeat customers generate a significantly higher total contribution per customer and year ($F = 26,160, p < 0.001$) is not surprising, to say the least. A more interesting result is the fact that returners generate a significantly higher total contribution per customer and year than non-returners ($F = 449, p < 0.001$). The interaction between the factors is also significant ($F = 2,750, p < 0.001$). For non-repeat customers, the total contribution per customer and year is significantly lower if they are also returners. For repeat customers, however, the total contribution per customer and year is significantly higher if they are also returners.

Table III.
The ANOVA results with respect to contribution per order in Sweden

Source	Type III sum of squares	df	Mean square	F	Sig.	Partial η^2
Corrected model	456,861,012	3	152,287,004	1,383	<0.001	0.025
Intercept	9,640,321,806	1	9,640,321,806	87,525	<0.001	0.347
Buying habits	158,668,911	1	158,668,911	1,441	<0.001	0.009
Returning habits	303,417,785	1	303,417,785	2,755	<0.001	0.016
Buying habits*returning habits	158,949,373	1	158,949,373	1,443	<0.001	0.009
Error	18,127,084,710	164,577	110,143			
Total	33,575,189,056	164,581				
Corrected total	18,583,945,722	164,580				

Table IV.
The total contribution per customer and year

BH	RH	SWE			NOR			DK			FIN		
		Mean	SD	n^*	Mean	SD	n^*	Mean	SD	n^*	Mean	SD	n^*
0	0	327	356	80	559	523	23	438	414	15	376	385	12
	1	157	339	19	349	637	4	238	417	3	220	362	4
	Total	295	359	98	525	549	27	406	421	18	339	386	16
1	0	921	944	29	1,599	1,495	8	1,152	996	4	1,021	946	4
	1	1,321	1,747	37	2,090	2,450	7	1,337	1,486	3	1,250	1,270	5
	Total	1,147	1,467	66	1,828	2,012	14	1,237	1,249	7	1,150	1,145	9
Total	0	484	630	109	824	989	30	579	644	19	532	636	16
	1	936	1,542	56	1,405	2,127	11	807	1,237	6	807	1,111	9
	Total	637	1,056	165	979	1,412	42	635	835	25	629	845	25

Note: The number of orders n^* is provided in thousands

Discussion and conclusions

Gattorna (2010) highlights the importance of understanding the dominating buying behaviour in a supply chain. This study tested whether the “one size fits all” strategy results in a homogeneous behaviour in fashion e-commerce. The grouping of customers (Table I) performed in this paper is not segmentation as such; however, it certainly indicates a heterogeneous buying behaviour and therefore merits further qualitative research regarding differentiated service delivery. The results from the quantitative analysis indicate an interesting pattern that supports Gattorna’s (2010) theory that the dominating behaviour found in one market appears in the others as well. Furthermore, the findings also support the theory predicting reduced behavioural homogeneity within countries and increased commonalities across countries (Broderick *et al.*, 2007), as the analysis found a heterogeneous pattern within markets and matching patterns among markets. However, the research design that was used does not allow for discussion as to whether the behaviour has changed over time, as suggested by Broderick *et al.* (2007), it only acknowledges the matching patterns.

The increasing competition of channels versus channels rather than companies versus companies emphasises all types of relationships between and among entities in the supply chain. These relationships have grown deeper and more profound and are developing into new areas. RM is one of the emerging and important new avenues for these developments. This aspect is important to all of the consecutive dyads in the chain, but it is of particularly vital interest for the link between the retailer and the consumer. RM is of great importance for building strong and lasting relationships in most dyads, and it is ultimately a decisive factor for obtaining competitive advantages and greater profitability. The role of RM as an order winner has not previously been explicitly studied, but this study demonstrates that the use purchasing and return data as bases for customer segmentation can considerably improve performance.

Most e-commerce companies have a wealth of data concerning returns. However, it can be stated that even though these companies are drowning in data, they are starving for information. This assertion indicates that the companies need guidelines for the analyses of existing data and the collection of valuable information.

Experiments with different tariffs for transportation and returns indicate that consumer behaviour is influenced by differentiated costs. The question is how this information can be utilised in a systematic segmentation model. This research demonstrates that one possible approach is to use return data as a vital facet of the

Source	Type III sum of squares	df	Mean square	<i>F</i>	Sig.	Partial η^2
Corrected model	31,762,561,573	3	10,587,520,524	11,475	< 0.001	0.173
Intercept	58,055,895,333	1	58,055,895,333	62,922	< 0.001	0.277
Buying habits	24,136,466,847	1	24,136,466,847	26,160	< 0.001	0.137
Returning habits	413,915,532	1	413,915,532	449	< 0.001	0.003
Buying habits*returning habits	2,537,269,709	1	2,537,269,709	2,750	< 0.001	0.016
Error	151,849,456,970	164,577	922,665			
Total	250,478,290,897	164,581				
Corrected total	183,612,018,543	164,580				

Table V.
The ANOVA results with respect to total contribution per customer and year in Sweden

model and complement this aspect of the model with purposefully collected data concerning buying behaviours (Ericsson, 2011). This method fits quite well with the evolving demand chain approach, which focuses on consumer behaviour and insight as well as the appropriate alignment of marketing, sales and logistics activities.

This approach also synergises well with the development of retailing towards increasing co-creation and greater reliance on social media. The term “co-creation” is not new, but it is receiving more attention at present as companies endeavour to differentiate themselves from the competition. In the past, value was created by companies in the chain, whereas value today is co-created at multiple points of interaction. Co-creation can occur not only for the physical product but also for the services in the value package. Notably, RM is one of the most promising areas for co-creation.

To summarise these research findings and relate the results to the overarching hypotheses and research purpose, the authors conclude that there is conclusive support for both hypotheses. The behavioural model described in this study demonstrates that customers behave in a heterogeneous way, which indicates that the “one size fits all” theory is obsolete, as the extant literature has indicated (Christopher *et al.*, 2006; Gattorna, 2010; Ericsson, 2011; Godsell *et al.*, 2011). The results also support previous findings that RM is an important aspect of the supply chain (Norek, 2002; Rogers *et al.*, 2002; Stock *et al.*, 2006; Mollenkopf *et al.*, 2007a, b; Frankel *et al.*, 2010; Mollenkopf, 2010) because consumer returns are an important part of e-commerce customer behaviour and are therefore important to both the case organisation and its partners, including the customers. Further, Mollenkopf *et al.* (2007b) highlight the risks involved in e-commerce and the importance of RM in the service recovery process.

This research empirically supports the importance of RM in the service recovery in fashion e-commerce, as a large group of customers are systematically returning purchases. However, companies using a “one size fits all” approach are focusing solely on RM efficiency and therefore missing the opportunity to create a competitive advantage. They are missing the potential value that differentiation could provide to their organisation, its customers (Mollenkopf *et al.*, 2007a) and its supply chain partners. A differentiated return service might attract new customers (non-adopters) and better support the customer groups with diverging patterns of returns; this topic is identified in this research paper as RM. This area is clearly an important facet of value creation, at least to certain customers.

We are all hard-wired with a range of different values, and we all have different expectations with respect to products and services. Therefore, there is an interaction between product/service categories and buying behaviour, but it is the buying behaviour that determines the demand patterns (Gattorna, 2010) and therefore how we should engineer our supply chains in both the forward and reverse (RM) directions. Moreover, it is the range of buying behaviours that determines the number of supply chains in the end, although a degree of approximation may be required to render this approach feasible.

Future research

The findings reported in this study indicate how customers behave and demonstrate that there is clearly a heterogeneous response from customers to the “one size fits all” strategy. It is important, though, to stress that customer segmentation is only a starting

point for aligning the resources of the firm (Gattorna, 2010) and the supply chain. Future studies should include qualitative research that creates a detailed understanding of why customers behave differently, as it is important to investigate customer values. This future research should also address methods of designing and delivering matching value propositions from a supply chain perspective.

E-commerce is an extremely competitive marketplace (Kim and Kim, 2004; Ericsson and Sundström, 2012). Therefore, demand predictability is troublesome, and customer returns increase the uncertainty and variability of demand. Early indications of demand, in season, might be viewed differently upon the later arrival of returns; these returns could change demand patterns. This consideration might have implications for how we source and replenish products. Therefore, future research must address the behaviour pattern described in this paper in combination with different product categories. This analysis should include the testing of Gattorna's (2010) dynamic alignment approach in e-commerce, which involves the alignment of customers/markets, strategies, internal cultural capabilities, and leadership styles.

References

- Alreck, P.L., Dibartolo, G.R., Diriker, M., Dover, H.F., Passyn, K.A. and Settle, R.B. (2009), "Time pressure, time saving and online shopping: exploring a contradiction", *Journal of Applied Business Research*, Vol. 25 No. 5, pp. 85-91.
- Andreassen, T.W. (2000), "Antecedents to satisfaction with service recovery", *European Journal of Marketing*, Vol. 34 Nos 1/2, pp. 156-175.
- Autry, C.W. (2005), "Formalization of reverse logistics programs: a strategy for managing liberalized returns", *Industrial Marketing Management*, Vol. 34 No. 7, pp. 749-757.
- Blackburn, J.D., Guide, V.D.R. Jr, Souza, G.C. and Van Wassenhove, L.N. (2004), "Reverse supply chains for commercial returns", *California Management Review*, Vol. 46 No. 2, pp. 6-22.
- Bonoma, T.V. and Shapiro, B.P. (1984), "Evaluating market segmentation approaches", *Industrial Marketing Management*, Vol. 13 No. 4, pp. 257-268.
- Broderick, A.J., Greenley, G.E. and Mueller, R.D. (2007), "The behavioural homogeneity evaluation framework: multi-level evaluations of consumer involvement in international segmentation", *J. Int. Bus. Stud.*, Vol. 38 No. 5, pp. 746-763.
- Christopher, M. (2005), *Logistics and Supply Chain Management*, Prentice-Hall, London.
- Christopher, M., Peck, H. and Towill, D. (2006), "A taxonomy for selecting global supply chain strategies", *The International Journal of Logistics Management*, Vol. 17 No. 2, pp. 277-287.
- Christopher, M., Mena, C., Khan, O. and Yurt, O. (2011), "Approaches to managing global sourcing risk", *Supply Chain Management: An International Journal*, Vol. 16 No. 2, pp. 67-81.
- Cooil, B., Aksoy, L. and Keiningham, T.L. (2008), "Approaches to customer segmentation", *Journal of Relationship Marketing*, Vol. 6 Nos 3/4, pp. 9-39.
- Croxton, K.L., Garcia-Dastugue, S.J., Lambert, D.M. and Rogers, D.S. (2001), "The supply chain management processes", *International Journal of Logistics Management*, Vol. 12 No. 2, pp. 13-36.
- Ericsson, D. (2011), "Demand chain management – the evolution", *ORiON: The Journal of ORSSA*, Vol. 27 No. 1, pp. 45-81.
- Ericsson, D. and Sundström, M. (2012), "Value innovation and demand chain management – keys to future success in the fashion industry", *The Nordic Textile Journal*, Vol. 1, pp. 83-90.

- Frankel, R., Mollenkopf, D. and Russo, I. (2010), "Effective returns management: enhancing retailer-supplier relationship", paper presented at Australian and New Zealand Marketing Academy (ANZMAC). Christchurch, New Zealand.
- Gattorna, J. (2010), *Dynamic Supply Chains: Delivering Value Through People*, Pearson Education Limited, Harlow.
- Godsell, J., Harrison, A., Emberson, C. and Storey, J. (2006), "Customer responsive supply chain strategy: an unnatural act?", *International Journal of Logistics Research and Applications*, Vol. 9 No. 1, pp. 47-56.
- Godsell, J., Diefenbach, T., Clemmow, C., Towill, D. and Christopher, M. (2011), "Enabling supply chain segmentation through demand profiling", *International Journal of Physical Distribution & Logistics Management*, Vol. 41 No. 3, pp. 296-314.
- Guide, V.D.R. and Van Wassenhove, L.N. (2006), "Closed-loop supply chains: an introduction to the feature issue (part 1)", *Production and Operations Management*, Vol. 15 No. 3, pp. 345-350.
- Harrison, A. and Van Hoek, R. (2008), *Logistics Management and Strategy*, Prentice-Hall, London.
- Hoyer, W.D. (1984), "An examination of consumer decision making for a common repeat purchase product", *Journal of Consumer Research*, Vol. 11 No. 3, pp. 822-829.
- Kim, E.Y. and Kim, Y.-K. (2004), "Predicting online purchase intentions for clothing products", *European Journal of Marketing*, Vol. 38 No. 7, pp. 883-897.
- Mollenkopf, D.A. (2010), "Reverse logistics – effective returns management in an integrated supply chain", available at: www.scmr.com/article/effective_returns_management_in_an_integrated_supply_chain (accessed 10 January 2013).
- Mollenkopf, D.A., Frankel, R. and Russo, I. (2011), "Creating value through returns management: exploring the marketing-operations interface", *Journal of Operations Management*, Vol. 29 No. 5, pp. 391-403.
- Mollenkopf, D.A., Russo, I. and Frankel, R. (2007a), "The returns management process in supply chain strategy", *International Journal of Physical Distribution & Logistics Management*, Vol. 37 No. 7, pp. 568-592.
- Mollenkopf, D.A., Rabinovich, E., Laseter, T.M. and Boyer, K.K. (2007b), "Managing internet product returns: a focus on effective service operations", *Decision Sciences*, Vol. 38 No. 2, pp. 215-250.
- Norek, C.D. (2002), "Returns management making order out of chaos", *Supply Chain Management Review*, Vol. 6 No. 3, pp. 34-42.
- Porter, M.E. (1996), "What is strategy?", *Harvard Business Review*, Vol. 74 No. 6, pp. 61-78.
- Rogers, D.S. and Tibben-Lembke, R.S. (1999), *Going Backwards Reverse Logistics Trends and Practices*, Reverse Logistics Executive Council, Pittsburgh, PA.
- Rogers, D.S., Croxton, K.L., Garcia-Dastugue, S.J. and Lambert, D.M. (2002), "The returns management process", *International Journal of Logistics Management*, Vol. 13 No. 2, pp. 1-18.
- Stock, J., Speh, T. and Shear, H. (2006), "Managing product returns for competitive advantage", *MIT Sloan Management Review*, Vol. 48 No. 1, pp. 57-62.
- Stock, J.R. and Mulki, J.P. (2009), "Product returns processing: an examination of practices of manufacturers, wholesalers/distributors, and retailers", *Journal of Business Logistics*, Vol. 30 No. 1, pp. 33-62.
- Wood, S.L. (2001), "Remote purchase environments: the influence of return policy leniency on two-stage decision processes", *Journal of Marketing Research*, Vol. 38 No. 2, pp. 157-169.

About the authors

Klas Hjort is a PhD student at The Swedish School of Textiles, University of Borås. He has a licentiate in technology management and economics from the Chalmers University of Gothenburg (2011). His research interests include e-commerce, supply chain management and specifically returns management, consumer behaviour, ICT, demand chain management, logistics and sustainability. His research has been presented at The Nordic Logistics Research Network (NOFOMA) conference and at the 17th International Symposium on Logistics (ISL 2012). His research is published in the *International Journal of Retail & Distribution Management* in 2012 and in NOFOMA and ISL conference proceedings. Klas Hjort is the corresponding author and can be contacted at: klas.hjort@plog.lth.se

Björn Lantz is an Assistant Professor at the School of Engineering, University of Borås. He has a PhD in business from the University of Gothenburg (2000). His research interests include consumer behaviour, e-commerce, health care operations management, logistics security, and methodology. His work has been published in *European Journal of Operational Research*, *Energy Economics*, *Information Economics and Policy*, and other journals.

Dag Ericsson is a Professor at the University of Borås and management consultant with logistics, supply chain management and business development as specialities. His research and practical applications concern the interface between technology, management and organizational behaviour and he has written a great number of books and papers in that area. As early as the 1960s, Dag Ericsson foresaw the development of what is today called supply chain management. He is now at the forefront of developing the more advanced concept known as Demand Chain Management. His current research and consulting focuses on cutting edge information and communication technology (ICT) as the enabler in creating business models in fast fashion.

John Gattorna is an Adjunct Professor at the University of Technology, Sydney (UTS) and at S P Jain School of Global Management, Singapore. John has spent a lifetime working in and around supply chains, in many different capacities line executive, researcher, consultant/adviser and teacher. In the late 1980s, John became disenchanted with the lack of conceptual depth in the “logistics” field; and as it turned out this did not improve much as logistics thinking morphed into “supply chains” in the 1990s. So he started to search for a new model/framework that would better inform the design and operation of enterprise supply chains seeking to satisfy customers and consumers. And he found it; dynamic alignment. It has been a complex task because it has involved learning about, and combining, several disciplines consumer/customer behavior; internal cultural capability of the enterprise; leadership styles; and of course the operational aspects of corporate logistics networks and supply chains.