



# The interface between retailers and logistics service providers in the online market

Yuan Xing

*Research and Business Development Office, London South Bank University,  
London, UK*

David B. Grant

*Logistics Institute, University of Hull, Hull, UK*

Alan C. McKinnon

*Logistics Research Centre, Heriot-Watt University, Edinburgh, UK, and*

John Fernie

*George Davies Centre for Retail Excellence, Heriot-Watt University,  
Edinburgh, UK*

## Abstract

**Purpose** – The growth in online shopping has presented challenges for physical distribution service quality (PDSQ) provided by retailers, including both multi-channel and pure players, and logistics service providers (LSPs). Issues emerging from a consumer survey regarding electronic physical distribution service quality (e-PDSQ) informed this paper's research, which aims to consider this phenomenon.

**Design/methodology/approach** – The research study employed qualitative interviews with retailers, logistics service providers and experts to consider the consumer survey findings and discuss the current market situation and suggestions for improvement.

**Findings** – Interviewees confirmed that pure players offer better e-PDSQ than multi-channel retailers as well as important constructs of availability, time, condition and returns regarding this phenomenon, but also raised issues of relationships between retailers and LSPs and costs regarding service trade-offs.

**Research limitations/implications** – The research undertaken was exploratory and will require further and wider testing in other contexts and geographical areas to assure external validity.

**Practical implications** – The findings have strategic importance for online retailers and LSPs to achieve competitive advantage and offer superior customer service.

**Originality/value** – This paper extends earlier, limited work on e-PDSQ and considers retailer and LSP points of view concerning previous research into consumer expectations and perceptions of e-PDSQ.

**Keywords** Internet shopping, Retailers, Distribution management

**Paper type** Research paper



## 1. Introduction

During the past decade the internet has created a retail and consumer revolution by providing a new channel for shopping. In Europe, online sales were estimated to be around 2 per cent of all retail sales in 2005 with forecasts of this figure increasing to 5 per cent in 2010. The UK currently has the largest share of that market and, along with

---

France and Germany, is expected to maintain around two-thirds of the European market in 2010 (IMRG, 2006). In the UK, Verdict Research Consultancy (2008) has noted that the online retail market has grown from £362 million or 0.2 per cent of retail sales in 1998 to £19.5 billion or 6.7 per cent in 2007, and is expected to account for 14 per cent of retail sales or £44.5 billion by 2012. Verdict has also indicated that although offline growth is faltering in the late 2000s as recession impacts upon high street sales the online market continues to grow as shoppers take advantage of comparative price shopping on the web.

These figures relate solely to the sale of physical products as opposed to services which are purely transaction based, for example tickets for entertainment or travel services (IMRG, 2006). The online purchase of physical products involves different handling and movement involving more substantial packing, picking, dispatching, delivering, collecting and returning. From a consumer's perspective a product purchased online or "virtually" cannot be utilised unless it is delivered to them at the right place, at the right time and in the right condition.

An important question here is who should undertake that activity in the online channel, the retailer or a third-party logistics service provider (LSP)? The key benefit that LSPs can provide to retailers is functional expertise. However, do they truly understand the retailer and consumer dyadic relationship and the consumer's need for order fulfilment? Further, how can they assist the retailer in their marketing efforts to online consumers and add value to the retail offering? These issues are of importance however as the preface to this special issue on the marketing perspective of logistics firms notes that LSPs have long been considered of minor importance in the area of marketing channel management.

While research has been undertaken on the marketing issues that retailers and consumers face in the online environment (Trabold *et al.*, 2006; Tih and Ennis, 2006; Bauer *et al.*, 2006; Parasuraman *et al.*, 2005; Lee and Lin, 2005) there has been less work carried out on the role of LSPs in contributing to that process. This paper thus investigates the role of LSPs in the online retail market to better understand the advantages they can offer to retailers and consumers, as well as the disadvantages that may result in service failure and loss of consumer loyalty.

This paper begins by discussing issues from the literature related to online fulfilment in terms of physical distribution service quality (PDSQ) and the role of LSPs in the context of business to consumer (B2C) e-commerce. It then discusses an extant framework concerning electronic PDSQ (e-PDSQ) and reports briefly on the findings of a consumer survey of e-PDSQ expectations and performance that provided the impetus for this follow-up research. Next, the paper presents this research study's methodology that consisted of interviews with retailers, LSPs and industry experts to confirm consumer expectations, address consumer concerns. The paper then reports the findings LSPs' contribution to the e-PDSQ differences between multi-channel retailers and pure players perceived by consumers. The paper concludes with suggestions for retailers and LSPs on how to improve e-PDSQ and recommendations for further research on this topic.

## 2. Literature review

As noted above online retailing has grown substantially in the last decade and this section will discuss the impact of this growth on the retail supply chain. Changes in

---

supply chain configurations will be reviewed to evaluate how traditional retailers have adapted existing logistics networks to supply this new marketing channel; conversely pure players have had to configure their e-fulfilment centres to manage dynamic growth. Such changes have led to major opportunities for LSPs in that retailers have invariably outsourced part or all of their online logistics operation. The nature of the LSP market will be discussed to provide background to the research gaps identified with regard to assessing LSP performance in online retailing.

### *2.1 The impact of B2C e-commerce on the retail supply chain*

The online shopping market is shared by pure players and multi-channel retailers. Pure players are companies that do not have an up-front store presence and sell products only via the internet (Boyer, 2001). Multi-channel retailers, also called “bricks and clicks” retailers, supplement conventional stores with online services (Burt and Sparks, 2003). Min and Wolfinbarger (2005) suggested that multi-channel retailers have advantages of prior customer base, well-developed brands, good relationships with suppliers, utilization of established distribution network and possession of extensive business knowledge. It was argued that pure players enjoy lower property and stock-keeping costs and their model is highly scalable with fewer constraints in product range, opening hours and geographical marketplaces (Cronin, 1996; Reynolds, 2000; Chen and Leteney, 2000). However, the ability to provide physical distribution service quality is a crucial factor in deciding which retailing format is likely to be more popular with consumers.

Physical distribution (PD) is generally regarded as the movement of finished products from points of production to points of sale and incorporates relationships between firms and their customers (Grant *et al.*, 2006). PD provides time, place and form utilities that are crucial to customer service and service quality.

Service quality (SQ) has been an important research topic in the marketing literature as the delivery of high service quality strengthens corporate brands and contributes to consumer satisfaction. While there have been many studies on SQ in services retailing, such as banks, hairdressers and professional services like accountancy (Brady and Cronin, 2001; Parasuraman *et al.*, 1985, 1988) there has been relatively less research on PDSQ in the online retailing sector.

E-commerce has brought about changes in supply chain configurations. Delfmann *et al.* (2002) explained how the emergence of electronic marketplaces is affecting LSPs. In a business to business (B2B) market e-commerce lowers search costs and makes the supplier in the upstream supply chain more visible. Long-term, stable relationships between suppliers and their customers become challenged and may move towards unstable, spot-market relationships.

Further, suppliers become more geographically dispersed. Fernie and Sparks (2009) argued that the implementation of techniques such as just-in-time delivery during the 1990s resulted in more frequent deliveries of smaller quantities; long-term physical flows were substituted by irregular and fast-changing physical flows. E-commerce has accelerated this trend which creates an opportunity for LSPs to provide flexible and extensive transport network and warehousing services. As a result, the e-market favours shared-user LSPs. On the other hand, for companies which do not wish to possess logistics know-how they can use these dedicated service providers to design and operate their complete logistics systems.

The development of e-commerce in the B2C market has an even bigger impact on the downstream supply chain. There is disintermediation within the supply chain and retailers no longer are the only interface with consumers. Every stage in the supply chain adds costs in the form of handling, shipping, profits and transaction costs (Delfmann *et al.*, 2002). Thus producers and wholesalers have the incentive to build their own websites and offer home delivery service to consumers directly.

Online shopping enables consumers to stay at home and wait for the products to be delivered by retailers. The responsibilities of many physical aspects of the fulfilment process, which previously lay with consumers at stores, are now taken by retailers. This final extension of the supply chain to consumers' homes adds greater complexity to the management of distribution systems. This has a major cost implication for retailers as efficient management of distribution and fulfilment can cut cost, enhance profitability and bring competitive advantages (Nicholls and Watson, 2005).

Disintermediation results in a shift from an echelon or indirect distribution channel to a hub-spoke network channel (Fernie and McKinnon, 2009). As a result, some of the regular and bulky product flows to shops are replaced by smaller, more frequent and multiple drops delivery to consumers' homes. Table I lists differences between e-commerce delivery and traditional delivery. Products for home delivery purposes are packaged individually and delivered in small vans which do multiple drops around one area. Time sensitivity is greater and deliveries can fail if consumers are not at home.

B2C e-commerce has also brought about changes in stocking systems. A traditional retailer's access to consumers and product offerings are limited by store size and inventory carrying capabilities (Van Vliet and Pota, 2001). In contrast, most non-food products ordered online are picked and packed from a regional distribution centre (RDC) or warehouse. The package or parcel is either sent to consumers directly or to a carrier's hub first and then to consumers. There are benefits of time and cost for retailers as they do not have to replenish shops (Burt and Sparks, 2003). However, stock availability in "virtual" stores presents different challenges. If a consumer walks into a shop and finds the product he or she wants to buy is out of stock, he/she will either buy other products or go to another shop (Corsten and Gruen, 2003). In a virtual store, however, it is very difficult to keep real-time availability information online.

Attributes	Traditional delivery	E-commerce delivery
Distribution chain	Producer-wholesaler-retailer	Online retailer-customer
Shipment size	Large	Small
Shipment type	Homogeneous	Heterogeneous
Number of loads (density)	High	Low
Number of delivery stops	One or more stops	Many stops
Delivery failure	Few	Many
Delivery frequency	Low	High
Delivery time sensitivity	Low	High
Number of vehicle required	Low	High
Vehicle size	Large	Small
Delivery cost per each load	Small	High

**Source:** Adapted from Nicholls and Watson (2005)

**Table I.**  
Characteristics of  
e-commerce delivery

Online shopping brings different logistics tasks and emphasises the importance of logistics. Traditional retailers need to redesign the supply chain system to become multi-channel retailers. Their existing distribution infrastructure needs to be adapted to the new requirements of the online market. Some retailers who sell furniture or other big ticket items already have home delivery systems in place, which they have been able to expand to accommodate online sales. Most retailers who sell small products may have little or no home delivery experience. Their distribution systems are geared to shifting pallets of goods from large warehouses to store shelves. For them, home delivery is a new area and how to add online capabilities properly to the existing business model is a challenge. They need to seek new logistical solutions.

Pure players need to configure an effective home delivery system. Some pure players build up their own e-fulfilment centres and use LSPs to do the final home delivery. They choose to keep in-house most of the physical flow handling to have better control and ensure service. An example is Amazon, which manages its four DCs in the UK itself and outsources the final delivery. Other pure players choose to use LSPs for most of the e-fulfilment process, which is a low-risk approach since less capital investment is required.

### 2.2 The impact of B2C e-commerce on the development of LSPs

To summarise, B2C e-commerce has created major new opportunities for LSPs. The range of services they can provide to online retailers, as discussed above, are listed in Table II.

Owing to the challenges related to the provisions of these services many retailers have determined their existing systems are not sufficient to cope in the internet era and have outsourced at least part of their operations (Doherty *et al.*, 1999). Reynolds (2000, 2002) suggested that for many pure players the challenge of fulfilment when they started was

Function	Activities
System management	Entire e-fulfilment system design including order taking and dispatching Order-tracking and tracing system Reverse system design Multiple carrier management system Vehicle route planning for multiple delivery drops
Warehousing	Central warehouse dedicated for home delivery Individual order picking, packing and sorting Stock-managing system which is connected to online stock availability
Distribution	Distribution between retailers' or suppliers' warehouse and carriers' depots
Delivery	Reliable and time-sensitive deliveries to consumers Delivery to remote rural areas Parcel delivery which ranges in weight and size Special deliveries such as flower or two-man products Unattended delivery service
Return	Return collection and replacement systems Return treatment and resale

**Table II.**  
Outsourcing services  
available in the B2C  
market

**Source:** Adapted from McKinnon (2003); Nicholls and Watson (2005)

---

more of building up a massive and expensive inventory to minimise out-of-stocks, than developing a coherent stock control and fulfilment management strategy.

Traditional LSPs have seen the growth in the e-market and are eager to gain market share. In response to this demand e-fulfilment specialists have also emerged that specialise in both B2B and B2C markets. Some of them are capable of offering an integrated service package from website design, order planning and processing, order tracking and tracing, security payment, warehousing, distribution and return management etc. Some others specialise in a particular field. E-fulfilment specialists are more likely to provide customised service and they can offer consultancy and strategic advice to the clients.

Apart from the traditional LSPs and e-fulfilment specialists, postal companies, parcel express companies and catalogue companies' distribution arms are also big beneficiaries from the rapid growth of the B2C e-commerce. According to a Retail Logistics Task Force (2000) home delivery report, the majority (93 per cent) of home deliveries are small parcels and packages. A study by Foley *et al.* (2003) suggested, on the basis of data from fifteen major carriers, that the average household in the UK receives around 22 packages per annum. Rowlands (2001) suggested that neither multi-channel retailers nor pure players are equipped to do nationwide home deliveries, especially small items, because the volumes do not justify a dedicated distribution network. So they seek access to existing parcel networks. Most last mile deliveries of small items to the end consumers are conducted on a shared-user basis by LSPs. In more recent research the utilisation of collection and delivery points are advocated as a solution to the unattended delivery problem (Rowlands, 2006).

McKinnon and Tallam (2002) outlined the structure of home shopping channels and the classified the various forms of "last mile" delivery to the home. Postal delivery is typically used when packages are small enough to pass through a letter box, e.g. small clothing items such as underwear or small gifts. The Royal Mail owns the biggest postal network across the UK. Parcel express companies "provides common-user service for a range of businesses, generating a high daily throughput of parcels" (McKinnon and Tallam, 2002, p. 17). These carriers tend to operate hub-satellite systems, comprising one or a few centralised consolidation warehouses and many local depots across the country. Carriers normally send out vehicles to pick up orders from the retailer's warehouse or its supplier's warehouse and then sort them out through the local depot. If the volumes are sufficient, a dedicated bulk shipment by a large truck can be arranged directly to the hub.

Rowlands (2001) suggested that e-retailers may go through three stages of evolution concerning outsourcing, especially warehousing. At start-up, they normally do their own warehousing as the volume is very small and can be handled easily in-house. When the business develops to a stage where they can no longer manage the scale, they contract the job out to LSPs. As the business continues to expand, retailers may take warehousing back in-house to get better control and to achieve economy of scale. They build their own warehouse and probably arrange their own delivery network.

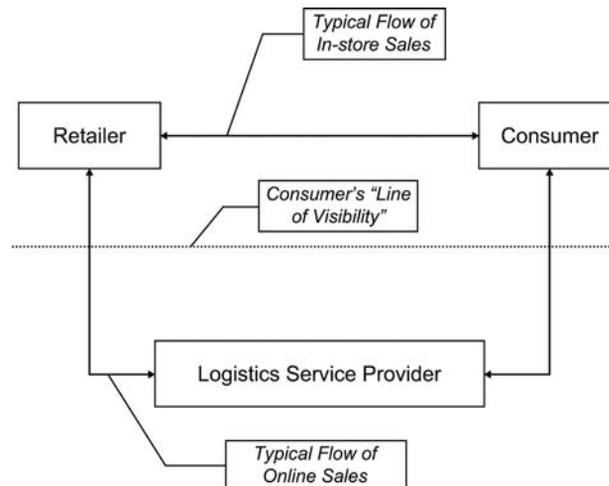
Outsourcing brings online retailers several benefits. By contracting out warehousing or deliveries, retailers may be able to obtain cost savings not attainable internally. Especially for pure players, they can avoid a very significant initial fixed cost and concentrate on marketing (Anderson *et al.*, 2003). Retailers also obtain LSPs' expertise which may take them years to develop. Enders and Jelassi

(2000) suggested that outsourcing the cost intensive physical handling of goods to LSPs would enable them to focus on their core businesses, i.e. the web-based retailing front-end of the business. However Rabinovich and Bailey (2004) noted outsourcing may also impose new expenses, such as monitoring and controlling the level of third party service to consumers. Problems may occur and the integration between retailers and LSPs is not always as smooth as expected. Control over outsourced activities can prove to be crucial.

The rapid growth of the B2C e-commerce has created a broad platform for LSPs. Outsourcing is common in online shopping and the home delivery market, thus LSPs' performance is directly related to e-retailers' service provision, especially in terms of the last mile delivery. Retailers need to weigh both the benefits and risks carefully when they choose LSPs.

The UK third-party logistics sector is very dynamic and complicated. With the expansion of the internet shopping market, more and more retailers choose to outsource home delivery related service. Although articles in the trade literature have described the outsourcing of logistics by multi-channel retailers and pure internet players, there has been little reference to the evolving relationship between e-retailers and LSPs. When undertaking logistical activities on behalf of e-retailers, LSPs may play a vital role in forming consumers' perceptions of service quality (see Figure 1). However, LSPs operate below a "line of visibility" from the consumer's perspective; this is similar to the line of visibility in service quality work by Zeithaml *et al.* (2002) and indicates that poor service provision by LSPs might reflect badly on the retailer's reputation and brand.

Notwithstanding, LSPs have been catalysts for growth in the online retail market. E-fulfilment was initially a constraint to growth and major barrier to consumers purchasing online (Verdict Research Consultancy, 2001; Chen and Leteney, 2000), however LSPs have helped alleviate those issues. Further, LSPs play a vital role in helping form consumers' perceptions of service quality. Nevertheless, little research



**Figure 1.**  
Product flows for in-store  
and online sales

**Source:** Adapted from Parasuraman *et al.* (1985)

---

has been undertaken on physical distribution service quality in the online retailing market, particularly from the retailer and LSP perspective. However, a framework is required to do conduct research that incorporates the fulfilment issues important to consumers. The following section discusses the genesis of such a framework.

### 3. Development of an e-PDSQ framework

Electronic service quality or e-SQ is considered an important driver for the success of B2C e-commerce. Being able to delivery superior e-SQ is also an effective differentiating strategy. E-SQ is defined by Zeithaml *et al.* (2002, p. 363) as “the extent to which a web site facilitates efficient and effective shopping, purchasing, and delivery of products and services”. Xing and Grant (2006) reviewed several extant studies and found that most focused on the consumer’s interface with the websites, such as website design and information availability; there has been little research on fulfilment, which is the essence of e-PDSQ.

The internet has led to the reduction of intermediaries in the supply chain and resulted in smaller, more frequent and multiple drops of home deliveries. From a consumer’s perspective, fulfilment is generally considered to be of the utmost importance and a crucial attribute affecting their judgment of service quality and satisfaction (White and Daniel, 2004; Burt and Sparks, 2003; Wolfenbarger and Gilly, 2003; Chen and Chang, 2003; Boyer *et al.*, 2003; Koster, 2002; Lavin, 2002; Retail Logistics Task Force, 2000). Further, fulfilment is identified as a main challenge facing internet retailers and a major barrier preventing consumers from purchasing online (Verdict Research Consultancy, 2001; Chen and Leteney, 2000; Doherty *et al.*, 1999).

Mentzer *et al.* (1989), Emerson and Grimm (1996), Bienstock *et al.* (1997) and Mentzer *et al.* (2001) developed PDSQ models that contained constructs of product availability, delivery timeliness, delivery quality, order status information and order condition. Although most of this work was based on a conventional B2B context it nevertheless contributed important constructs and insights for a study of e-PDSQ in B2C settings, and provided a basis on which Xing and Grant (2006) developed an e-PDSQ framework.

There are relatively fewer studies focusing on e-PDSQ, however Rabinovich and Bailey (2004) considered e-PDSQ is represented by inventory availability, delivery timeliness and reliability and argued that multi-channel retailers exhibit better availability performance than their pure player competitors. Owing to the intangible nature of their business, pure player retailers need to build up a trustworthy brand among consumers. The home delivery service is the only face-to-face opportunity pure players have to interact with consumers, which may explain why pure players can exhibit good reliability. But despite advantages multi-channel retailers enjoy over pure players the success of firms like Amazon, play.com and ebay.com indicates that pure players may have a bright future. New pure players are also in a better position to start fresh and establish new channels that build up the trustworthiness (Mintel, 2000).

Based on PDSQ constructs and variables previously developed and tested Xing and Grant (2006) derived a set of constructs and variables from the consumer’s perspective that addresses the issues facing retailers who sell on the internet, both multi-channel retailers and pure players. The constructs of availability, timeliness, condition and return and their respective variables that results in their framework are denoted in Table III.

**Table III.**  
E-PDSQ framework  
dimensions and variables

Dimensions	Variables
Timeliness (T)	Choice of delivery date Choice of delivery time window Deliver on the first date arranged and within specified time slot Quick delivery Specification of delivery time slot
Availability (A)	Confirmation of availability Substitution offer Order-tracking and tracing system Confirmation of waiting time in case of out-of-stock situation
Condition (C)	Order accuracy and completeness Order in-transit damage Condition on arrival
Return (R)	Return channels options Promptness of collection Promptness of replacement

Availability refers to inventory capability, the success in having inventory readily sourced to fill consumer orders (Mentzer *et al.*, 1989; Maltz and Maltz, 1998). It is about whether the product is in-stock at the point of order placement and if not, when it is going to be available or what kind of substitution may be made. Timeliness measures order cycle performance, and for the consumer, "it is the time elapsed between placing and receiving an order" (Mentzer *et al.*, 1989, p. 56). Condition is the "form and composition of the delivered order" (Bienstock *et al.*, 1997 p. 32). It is about the accuracy and quality of the order. Lastly, Return refers to the process that products are returned from the point of consumption to retailer or supplier for possible repair, resale, or recycling etc. (Tarn *et al.*, 2003). It is about how a retailer deals with damaged, unwanted or faulty products; how many channel options consumers have to return products; and how promptly products can be collected or replaced.

LSPs' roles in online retailing and home delivery should not be evaluated in isolation without understanding both consumer and retailer perspectives. Thus, a first step was to empirically test the e-PDSQ framework to determine its appropriateness and applicability in the B2C online marketplace from a consumer's perspective, investigate actual home delivery performances provided by retailers and LSPs against the e-PDSQ framework, and determine if there are any differences in e-PDSQ between multi-channel retailers and pure players. And then we would explore the factors responsible for any e-PDSQ differences and the roles that LSPs have played in contributing to these differences.

#### 4. A consumer survey of e-PDSQ

To set the context for the exploratory research with retailers and LSPs a consumer online shopping survey was conducted, and which is reported elsewhere (Xing *et al.*, 2006). We herein discuss the salient points from that survey that prompted and informed this follow-up research with retailers and LSPs.

The following research questions applied to the consumer study:

- (1) What e-PDSQ variables do consumers rate e-retailers on and how important are these variables?
- (2) What were actual home delivery performance experiences achieved by multi-channel and pure players retailers compared to the e-PDSQ framework?
- (3) What factors affect any e-PDSQ differences found in (2)?

A postal survey was developed from the constructs and variables identified in the e-PDSQ framework above and conducted across 3,000 random households in Edinburgh, Scotland. The survey yielded 372 usable responses for a response rate of 12.4 per cent.

Regarding the first research question respondents were asked to evaluate how important the fifteen variables shown in Table III were from “unimportant” (1) to “very important” (5) using a five-point Likert scale (Hair *et al.*, 1995). Table IV shows the means of the fifteen variables in order from high to low; the results suggest respondents are very concerned with order condition and return. Pure players scored higher in the means of all 15 variables. But independent *t*-tests showed that statistically significant differences only existed in three variables: order tracking and tracing, order accuracy and completeness, and condition upon arrival at significance levels  $p = 0.004$ ,  $p = 0.000$  and  $p = 0.000$  respectively.

Regarding the second research question respondents were asked how they perceived the overall home delivery service provided by the e-retailers through which they made their most recent online purchase and up to five other purchases made within the past six months. The mean score for pure players was 4.43 while the mean score for multi-channel retailers was 4.13. Independent *t*-tests showed that the mean differences of overall service quality between multiple retailers and pure players were significant at the  $p = 0.000$  level. This, pure players were perceived to have better home delivery performance than multi-channel retailers.

Ranking	Variable (Construct)	Mean	SD
1	Order damage in-transit (C)	4.94	0.28
2	Order accuracy (C)	4.86	0.39
3	Return channels options (R)	4.64	0.57
4	Order confirmation (A)	4.62	0.63
5	Prompt replacement (R)	4.53	0.66
6	Deliver on the first date arranged (T)	4.53	0.73
7	Specific delivery date (T)	4.45	0.78
8	Prompt collection (R)	4.37	0.72
9	Ability to deliver quickly (T)	4.30	0.78
10	Deliver in time slot (T)	4.30	0.88
11	Waiting time for out-of-stocks (A)	4.27	0.86
12	Order completeness (C)	4.19	0.92
13	Specific delivery time slot (T)	4.14	0.95
14	Order tracking and tracing (A)	3.82	0.99
15	Alternative offer (A)	2.79	1.15

**Table IV.**  
Consumer perceptions of  
most-important home  
delivery variables

Regarding the third research question exploratory factor analysis was used to assess the main study data and yielded five factors utilizing all 15 variables (Hair *et al.*, 1995). The results are presented in Table V.

The results exhibited good KMO and Bartlett's measures and also explained 65 per cent of the total variance. The first two factors have satisfactory factor reliability as Cronbach's Alpha values are greater than the suggested minimum of 0.70 (Hair *et al.* 1995). However the other three factors only have two variables each; thus Cronbach's Alpha was not calculated for these factor and the inter-item correlations are shown instead (Carmines and Zeller, 1979). These correlations are not strong, particularly for the fifth factor.

The first factor contains all the variables of the *Return* construct and two variables from the *Condition* construct. It suggests that the return of products is strongly associated with order accuracy and condition upon arrival and consumers are very likely to return incorrect or damaged products. The second factor contains four variables of *Timeliness*, including specification of delivery date and time window, and fulfil the promises. The third factor has two variables, order tracking and tracing and quick delivery. It implies that consumers who are eager to check the order status online are likely to be those who want their orders to be delivered as soon as possible. The fourth factor consists of two variables of the *Availability* construct: order confirmation and notification of waiting time if the product is out-of-stock. Most people would like to know a product's availability before they place and order but if the product is out-of-stock, they want to be informed of how long they need to wait. The fifth factor consists of alternative offer and order completeness. It could be considered here that if an item is missing from an order, people might want an alternative offer for that missing item.

Variable/factor	1	2	3	4	5
Prompt replacement	0.80				
Easy return	0.79				
Prompt collection	0.71				
Order undamaged	0.69				
Order accuracy	0.58				
Specify delivery time slot		0.88			
Deliver in time slot		0.87			
Deliver on the first date arranged		0.77			
Specify delivery date		0.61			
Order checking			0.86		
Ability to delivery quickly			0.81		
Order confirmation				0.80	
Waiting time for out-of-stock				0.67	
Alternative offer					0.74
Order completeness					0.60
Initial eigenvalues	3.9	2.2	1.4	1.2	1.1
Variance explained (%)	26	15	9	8	7
Cumulative variance explained (%)	26	41	50	58	65
Cronbach's Alpha (inter-item correlation for two variables*)	0.78	0.82	0.64	0.41*	0.33*

**Table V.**  
Factor analysis of  
consumer survey

---

The consumer survey findings identified a range of variables that UK retailers and their LSPs can use to develop appropriate customer service policies and adjust the priority given to these variables. The e-PDSQ framework thus provides a useful and parsimonious set of key performance indicators (KPIs) against which retailers can measure and monitor their online performance effectively and also use with suppliers to effect reliable delivery to time or directly to consumers (Davis-Sramek *et al.*, 2008).

Second, the consumer survey analysed the strengths and weaknesses of both multi-channel retailers and pure players and provided suggestions at a strategic level for their development. Multi-channel retailers enjoy wide exposure and long established trust among consumers and should adopt the internet as a useful channel to broaden their service offerings and enrich the consumer's shopping experience. The internet can be a unique opportunity for established multi-channel retailers to penetrate new markets and seek more growth. They can also use the new channel to enhance their competitive advantages.

On the other hand, most successful pure players to date are considered to be synonymous with consistency and reliability. They started a revolution of alternative shopping, satisfying people's multiple needs. Enjoying a first mover advantage and often equipped with the latest technology, pure players possess a technical know-how advantage. But they must work very hard to maintain their edge in delivering a speedy and reliable service. Multi-channel retailers may make good use of their edges over pure players, and provide good e-PDSQ to cross-channel consumers. Successful multi-channel retailers are those who deliver a consistent message of brand and service over all the channels and cater for different consumer needs.

Thus, there were significant overall e-PDSQ differences found between pure players and multi-channel retailers. Pure players were perceived to have performed better and this finding is partly in line with the study of Rabinovich and Bailey (2004) which shows that multi-channel retailers exhibited better availability than their pure play competitors. Multi-channel retailers are more capable of achieving better stock synergy which probably leads to better availability confirmation service.

However, the role of LSPs in effecting fulfilment was not featured in the consumer survey and did not emerge as a consideration in any qualitative, open-ended questions. Thus, these results and the importance of LSPs as noted in the literature led to the consideration of further research and the basis for this paper. The research questions investigated in this study are as follows:

- RQ1.* What are the reasons causing the e-PDSQ differences between multi-channel retailers and pure players, and, how much do LSPs contribute and/or influence to these differences?
- RQ2.* What are the problems and constraints in the home delivery market and how can retailers and LSPs improve home delivery or physical distribution service quality to satisfy online consumers either independently or by collaborating?

## 5. Methodology

The phenomenon investigated in this study is an under-researched topic and thus an exploratory approach was used (Miles and Huberman, 1994). In-depth interviews with e-retailers and LSPs were conducted to explore the research questions emerging from the consumer survey. Retailers' provision of service may be related to factors such as

---

organisational structure, they LSPs they collaborate with, the product categories they handle, and so on. However, the degree of impact of these factors on e-PDSQ is unclear and there may be other factors not considered in the literature. In this sense, in-depth interviews would yield rich information.

The sampling process sought to target multi-channel and pure player retailing companies, LSPs (including e-fulfilment companies and carriers) and home delivery industry bodies. Three basic interview questionnaire formats were designed for retailers, LSPs and industry bodies respectively. They included closed as well as open-ended questions so the interviews would be flexible enough to be exploratory and at the same time rigorous enough to examine in-depth information.

The interview questions for retailers were divided into five sections. The first section consisted of a few questions regarding retailers' retailing proposition and their online channel's development. The second section was related to the nature of retailers' home delivery operations and structure of their systems. General questions about their IT, sourcing, warehousing, delivering, outsourcing and returning systems were asked. This section was especially important to find out how multi-channel retailers combine or separate traditional and online channels. The third section was dedicated to discussing retailers' LSP partners. Retailers were asked to provide detailed information about their outsourcing activities and their system integration and collaborative relationships with the LSPs. The fourth section asked retailers to describe their home delivery performance in terms of availability, condition, timeliness and return, i.e. the four dimensions in the e-PDSQ framework. Their views on unattended delivery options were also discussed. The last section asked a few general and exploratory questions about cost, e-fulfilment and the home delivery market.

The interview questions for LSPs were divided into three sections. The first section discussed LSPs' involvement in the home delivery market and their integration into their clients' systems. They were also asked to comment whether they perceived any differences between working with multi-channel retailers and with pure players. The second section had detailed questions related to LSPs' home delivery outsourcing operations in terms of availability, timeliness, condition and return. Their opinions on issues such as unattended options and home delivery challenges were also invited. Finally, the third section was concerned with cost, charging and service issues. They were also asked to comment on the development of home delivery market in general.

The interview questions for non-company industry specialists were tailored to each organisation as their nature was very different. The organisations' roles and functions in the industry were explored. As the interviewees are experts and not attached to either retailers or LSPs, they were expected to provide relatively objective point of views. The interviewees' opinions on the following issues were asked:

- the performance of multi-channel and pure player retailers;
- the collaboration between retailers and LSPs;
- the constraints and problems in e-fulfilment;
- the current state of home delivery market; and
- the unattended delivery solution.

Names and addresses of retailing companies, especially those mentioned in the consumer survey, and LSPs were collected from web sites, the media and other contact

sources. As a result, twenty-five interview invitation letters were sent out to potential interviewees. Sixteen companies responded and agreed to be interviewed: six from retail companies, seven from logistics companies, one from an e-fulfilment software company, one e-fulfilment journal editor, and one from an industry body; details are shown in Table VI.

The sample of retailing companies covered the apparel, household products, DIY, office supplies and department store sectors. Four retailers are among UK's biggest retailing groups and have a combined annual turnover of more than £20 billion. The interviewees were individuals who held management responsibility for the development and operation of the organisation's e-commerce activities. Their job titles varied; some were from an IT or marketing background and others were from logistics and fulfilment backgrounds. As to the interviewees from the logistics companies, the sample covered traditional LSPs, e-fulfilment specialists and carriers. They all have national coverage of distribution infrastructure. The interviewees' job titles varied from site manager, home delivery manager, to logistics director and CEOs.

The interview questions were piloted on two of the sixteen industry experts and had minor revisions: notes of these pilot interviews were taken and transcribed afterwards. All the other interviews were tape recorded and then transcribed. Three interviews were conducted over the telephone, and thirteen others were face to face interviews. Each interview lasted between 50 minutes to two hours. The interview format was standard with certain flexibility as the interview questions were tailored to each company to allow relevant issues to be probed as deeply as possible.

The interview data were examined and analysed for recurring themes and issues across the separate cases (Miles and Huberman, 1994). Content analysis was adopted in order to identify the common themes and major concepts. For example, all data relating to the theme of "which retailing format is more efficient" were grouped together.

The following analysis section discusses the interview results based on the research questions, identified themes, actual home delivery operation and performance of retailers, traditional retailers' challenges, and different retailers' relative advantages.

Code	Type of the company	Interviewee's title
RET1	A general merchandise multi-channel retailer	Head of planning
RET2	A home improvement and garden centre retailer	Logistics development manager
RET3	A multi-channel retailer	Home delivery manager
RET4	A multi-channel retailer	Logistics manager
RET5	A fashion catalogue company	Marketing director
RET6	An office product company – pure player	E-commerce manager
LSP1	An e-fulfilment company	CEO
LSP2	An e-fulfilment company	Site operations manager
LSP3	A 3PL	Engineering director
LSP4	A specialised carrier	Managing director logistics
LSP5	A parcel express company	Operations manager – home delivery
LSP6	A parcel express company	Regional manager
LSP7	A parcel express company	CEO
SOT1	A software company in carrier management	CEO
IND1	An e-retail industry body	CEO
IND2	An industry magazine in e-fulfilment	Editor

**Table VI.**  
List of interviewees

## 6. Analysis of interviews and discussion

This section discusses the two research questions presented at the end of the consumer section, including considerations of relationships and costs that emerged from the interviews.

*6.1 RQ1: Reasons for e-PDSQ differences between multi-channel and pure player retailers*  
The interviewees were informed of the consumer survey results that pure players were perceived to provide better e-PDSQ than multi-channel retailers and the interviewees were asked whether this finding was in line with their experience. More than half of the interviewees said that the finding did not surprise them.

The first reason is that there is a degree of variation in service quality within each sector due to consumers' expectations and prices. IND2 compared the traditional shopping from online shopping. When people shop from a store they expect the retailer to have what they want. They buy products and walk out of the store. While online there is no standard expectation so there is no standard service. Some e-retailers believe they have to offer express delivery and some others offer only standard delivery. IND2 commented:

Probably some retailers assume consumers will buy on price and as long as they offer price, it is alright to have variation in service quality. But I don't think price should be a viable position to the future on its own.

The lack of a consistent standard to evaluate online service among consumers may cause some confusion, supporting long-held assertions by service marketers such as Parasuraman *et al.* (1985, 1988) and Brady and Cronin (2001).

Second, pure players appear to be better organised and equipped at this moment because their whole business is the online part and that is all they do (Anderson *et al.*, 2003). LSP1 suggested that retailers had their core retail systems, and online channel was secondary to stores. They share information between the two systems. Most of LSP1's clients have a central stock system and they treat the online channel like another store. They replenish LSP1's warehouse automatically as if replenishing a store when stocks run out. LSP1 continued:

For retailers stores always come first than online channel. Online channel doesn't get the same attention as stores. It is like any business model, the more you concentrate, going into details, the better service quality you provide.

Third, delivery service variations are more related to product category than retailer types. Small products are sent in parcels or packages, easy to deliver and receive. Large products have high damage rate and need consumers to commit more time waiting at home. Many pure internet players offer products that are standardised in package and delivery, such as books, CDs, electronic products and gifts. Multi-channel retailers normally offer a broader range of products with different delivery requirements, leading to an inconsistency in service. As a result multi-channel retailers may also have to use more carriers for different delivery requirements which result in more complicated management systems. That makes direct comparisons of service quality between two types of retailers difficult (Rabinovich and Bailey, 2004).

Fourth, consumers' expectations affect their perceptions. Some consumers may have very high expectations of well-known retailers thanks to the trust developed in the conventional high street business. But big brand retailers may not necessarily be capable of providing superb home delivery service when moving online. High

---

expectations can result in low perceptions if not satisfied. On the contrary, when consumers deal with a new pure internet player without knowing what to expect their perceptions can be very high if a reasonably good service is delivered (Parasuraman *et al.*, 1985, Burt and Sparks, 2003).

### *6.2 LSPs' contribution to the e-PDSQ differences between multi-channel and pure player retailers*

Apart from the above reasons, LSPs also contribute to the e-PDSQ differences supporting McKinnon and Tallam (2002). LSPs vary in home delivery service types and prices. It is unanimously agreed by all interviewees that wide variation exists in terms of service offerings, speed of delivery, parcel size, weight, product category, delivery time and where the delivery destination is. For example, some LSPs are good at premium and express parcel delivery and provide a speedy and broad range of delivery options including next day, early morning, evening and weekend delivery, while catalogue supporting LSPs and some others tend to offer a limited range of services, focusing on the standard weekday deliveries which are less speedy. Some LSPs are better equipped in technology such as efficient electronic tracking and tracing system, or electronic signature system.

E-fulfilment specialists appear to be more experienced and offer more services than established LSPs. Their specialty and know-how enable them to provide system and process design and more integrated service. Retailers who use the specialists can benefit from "one-stop shopping", expect a more smooth operation and reduce the risk of using someone who is less experienced. This is not to say that established LSPs provide inferior service quality: they lack the depth and variety of service offerings. They have entered a new area that some of them have yet to become experts, although given time they will increase and improve their service offerings.

Express carriers differ from standard carriers mainly in speed and prices. More than half of the interviewees hold the view that carriers all reasonably provide certain service within the service and price range. RET2 suggested that the carriers they are using are all reliable. He gave the example of a big carrier which is very consistent in the service although less flexible, where some of the smaller carriers the retailer uses can offer additional flexibility but are also more prone to problems. Thus it is a trade-off between flexibility and consistency. Both express and standard carriers can be reliable, but those who charge higher and promise a quick delivery are supposed to deliver a better service in terms of speed and timeliness at least than those who charge less and give a few days' delivery time range. Thus the difference in LSPs' B2C experience, specialty and prices contributes to retailers' e-PDSQ differences although there is no evidence that pure players necessarily use better carriers than multi-channel retailers.

### *6.3 A consideration of the relationship between online retailers and LSPs*

During their interviews LSPs were probed as to whether there was any difference in dealing or integrating with multi-channel and pure players as relationships may contribute to the e-PDSQ differences, which have been considered an issue between retailers and LSPs in other contexts (Grant, 2005). All carriers interviewed suggested that there was no difference between groups. Carriers provide a standard service and do what they are told by their clients. They pick up parcels from either a retailer or an LSP and then deliver them to consumers.

---

In the view of logistics companies, the degree of service quality variation has little to do with what type of retailers they serve, but has a lot to do with what kind of services are required by the retailers and the nature of their relationships. LSPs provide either dedicated or shared-user services to retailers and the degree of collaboration varies. Generally speaking, retailers may get a better deal if they require a dedicated service from a logistics company or carrier: the volume justifies it. LSP1 commented:

Our relationship with clients varies greatly. We can have true partnership, dealing with problems together. They understand what partnership is. While others just beat our head when things go wrong. They have much less understanding and just want us to do what they demand and often not prepared to pay for what they want. We have one client with whom we have fantastic relationship and they have the best service from us.

Multi-channel and pure player retailers may use different customer service functions of LSPs. LSP5 mentioned a difference in customer service that multi-channel and catalogue companies tend to use the LSP's customer service department as back-up on top of their own call centres. Pure players handle most of their consumer enquiries electronically and do not use LSP5's customer service department very often. It is probably because pure players have better online systems or pure players' customers are more comfortable to use the internet for the whole order process. And these subtle differences may have made pure players to have more control over customer service and thus are perceived to provide better services.

#### *6.4 RQ2: The current home delivery market*

All interviewees unanimously agreed that the market would consolidate and merge. The current market structure is very fragmented with about 20 national carriers, each of whom has a relatively small share of the market. The market is not sustainable and is undertaking quite heavy rationalization with some companies incurring financial difficulties. But as e-commerce is growing rapidly, there may be more players coming into the market in the short-term. Many B2B carriers and traditional LSPs have started to operate in the B2C market and competition has intensified. Most carriers who are profitable are now highly specialised. Differentiation is crucial in securing good market shares in the market. In the long term however, the market will consolidate and there are likely to be fewer players in the future.

#### *6.5 How to improve home delivery performance across the four e-PDSQ constructs*

Comparing the consumer survey and company interviews, similar issues consumers felt unhappy with were addressed and emphasised by retailers and LSPs. The following sections discuss the home delivery quality four constructs contained in the e-PDSQ framework of availability, timeliness, condition and return from the perspective of what consumers want, what retailers and LSPs offer, and what could be improved.

*6.5.1 Availability.* Pure internet players were perceived by consumers to perform better than multi-channel retailers significantly on this variable refuting Rabinovich and Bailey (2004). The interviews confirmed that many multi-channel companies do not have an online order track and trace system yet. Thus there is a big gap between what consumers want and what they are offered. Retailers, especially multi-channel retailers, need to develop an online order tracking systems or provide a link to LSPs' websites for consumers to track orders. For retailers who have difficulty in developing

---

such a system, they can resort to software applications that operate alongside the existing ordering systems of retailers. These software systems enable timely contact with the customer by email or text message during the fulfilment process, ensuring that the customer is informed about their order status at relevant times and most importantly informing them when the goods are ready for dispatch, offering choices and confirmation of the delivery date and time. They can save retailers from spending resources to develop their own, but close collaboration with LSPs is needed to offer a named delivery date and time that consumers prefer.

*6.5.2 Timeliness.* The company interviews showed that the most common service is the standard three to five days delivery which explained the relatively low consumer satisfaction in timeliness. Timed delivery is rare except for two-man products. Clearly, consumers are denied the options they want as retailers and LSPs are concerned at the costs of providing premium delivery. However, once they start to offer more options they may find there is good demand for them and eventually there may be enough volume to support the operation.

Retailers should provide more delivery options and consumers who are happy to pay will choose delivery options with more specified dates and times. The surcharge they pay will compensate for the high cost of delivery. Given that availability is guaranteed, quick dispatch and delivery can win consumers' and enhance customer satisfaction. A first-delivery success rate is high on the retailers' and LSPs' agendas. The following has been derived from the interviews and could improve first-delivery success rate:

- use email, phone calls or texts to advise the delivery date and time to consumers, including sending a few reminders;
- ask consumers about alternative options if nobody is at home before the delivery, and give them more choices about how and when they receive orders;
- package small items such as books, beauty products or gifts in such a way that they can be delivered through the letterbox if possible; and
- retailers should involve LSPs to communicate with consumers as much as possible or develop a link to LSPs' websites.

Adopting some or all of these suggestions would enhance the timeliness construct, identified as important (Mentzer *et al.*, 1989; Emerson and Grimm, 1996).

*6.5.3 Condition.* The consumer survey showed a high consumer satisfaction on order accuracy, order condition and order completeness. However, the interviews showed that damage is a problem for furniture or houseware products. Retailers and LSPs should use packaging materials which can stand for two delivery trips at least, tighten packaging requirement and improve picking and packing quality, use specialised service for bulky and fragile products, and train drivers to be considerate and polite to ensure that products arrive in appropriate condition (Bienstock *et al.*, 1997) so that returns may be reduced.

*6.5.4 Return.* The consumer survey showed that consumers were not happy with the speed that returned products were collected and replaced, although they were happier with the ease of return methods. The interviewees confirmed that once a customer had decided to return an item they wanted it out of the house as quickly as possible (Tarn *et al.*, 2003). Product damage and wrong labeling or addresses are the

---

two main reasons causing returns. Retailers and LSPs should use accurate packing, sorting and labeling, as well as correct routing and address checking software.

Further, retailers should give detailed and accurate product information online so to make sure that consumers get what they think they will. Returned products should be dealt with properly so they can be repaired, repackaged and resold. Once a retailer gets a return request from a consumer they should arrange for goods to be promptly returned or replaced. Clear instructions should be given to consumers if they want to return goods themselves.

### *6.6 A consideration of cost*

Although logistical issues can be powerful differentiators, the above sections described a few gaps between what consumers want and what could be done commercially. However, retailers and LSPs are also pressured to improve service offerings with reduced costs and several respondents brought this issue out in their discussions and their observations and some suggestions for improvement are offered next.

A high operational cost and tough retail environment make retailers very cost sensitive; technological advancement needs investment; and retailers have to balance between the home delivery cost and charging. E-commerce is a scale business with costs that are largely fixed, e.g. warehouses and fleet. Goods are sold at discounted prices online so volume is crucial. LSPs need to be flexible in the operations and concentrate on resource planning. Thus, retailers should be more open and provide transparent delivery information online so consumers have more realistic expectations.

Retailers and LSPs should engage in proper vehicle maintenance and driver training schemes to minimise fuel use. Retailers' marketing capital can be best spent creating a good customer experience, which spreads quickly on the internet to attract more customers. Thus it is worthwhile to invest in good delivery offerings.

Further, flexibility of resources for LSPs is key so that dedicated, shared and subcontracted services are mixed to optimise warehousing and fleet resources. Lastly, quick resolution of consumer complaints not only brings costs down but also increases customer satisfaction and retention rates.

## **7. Conclusions**

This paper has considered the interface between retailers and LSPs in the online fulfilment environment; thus meeting the objective of this special issue to present insights into the under-researched marketing aspects and perspectives of logistics firms. As purchases over the internet grow the matter of delivering the right products at the right time to consumers also grows in importance. This matter is a function of the service quality provided by LSPs and other delivery services on behalf of both multi-channel and pure play retailers. Thus, this research is timely, important to both retailers and LSPs, and adds to our understanding of the issues surrounding this new and vital marketplace.

This research study focussed on two questions that emerged from a consumer survey. The survey found that consumers perceived pure player retailers to provide better e-PDSQ than multi-channel retailers and the first research question investigated the reasons for this perception and whether LSPs contributed to this difference. The findings from interviews of retailers, LSPs and other experts indicate that multi-channel retailers are considered to still be learning what customer service

---

needs and delivery standards are in this environment. Pure players already understand such needs and standards as they comprise the core competitive criteria for them; if a pure play retailer doesn't understand them consumers will not return. Interviewees also indicated that traditional LSPs contribute to this difference as they are also still learning the nuances of this market; this might be due to many of them providing delivery services for multi-channel retailers. E-fulfilment specialists are considered to better appreciate these nuances as they are generally used by pure players.

The second question investigated the internet home delivery process according to the constructs used in the consumer survey. The company interviewees considered pure play retailers have superior information technology and software systems that enable them to advise consumers better regarding product availability and the delivery process. However, respondents also considered delivery standards provided by both LSPs and fulfilment specialists are still lacking and would benefit from being tightened up and providing more options to consumers. Interviewees considered that consumer dissatisfaction with product condition and returns boil down to retailers needing to provide better packaging that can withstand more than outbound trip and a better collection and return process. Finally, the need to provide good service at the right cost emerged from the interviews and must be considered in all improvement decisions.

In summary, the findings from this qualitative research of retailers, LSPs and experts demonstrate that the variation in service quality offered by LSPs and relationships between LSPs and retailers have contributed to e-PDSQ differences between multi-channel retailers and pure players perceived by online consumers. To address these shortcomings retailers and LSPs would benefit from undertaking collaborative operations and marketing to better serve consumers, reduce costs and thus become more profitable. The use of the e-PDSQ framework discussed in this paper could provide a useful tool to ensure all aspects of consumers needs are addressed.

Retailers, LSPs and consumers are the three main stakeholders in online shopping and the home delivery market. They all need to communicate more and look for mutual understanding and solutions. Inefficiency of home delivery stems mainly from the interfaces of these concerned stakeholders and thus a solution focus needs to define responsibility areas and improve communication.

Retailers need to have an exact understanding of what consumers want and what LSPs can offer from end to end and how they differ in service provision to meet those needs. Retailers should meet their carriers regularly to identify problems, solve them quickly and agree on important issues. Retailers should also meet their consumers and listen to their needs and check whether LSPs do their jobs properly. Creating the right values for all parties, maintaining longer relationship and committing to ideas together are very important.

As this work was exploratory in nature it is limited regarding generalisability across a wider range of organizations and sectors. Future research should expand this study using more quantitative methods to include wider groups and also further examine key variables from the consumer survey and emerging from this study in order to generate better validity. Further, such research should measure the more "soft" variables of logistics service quality. For example, the manner and knowledge of delivery staff may affect consumers' perception. The topic of logistics service quality, consumer satisfaction and relationships is important and ongoing research is needed in today's dynamic online shopping and home delivery marketplace.

**References**

- Anderson, W.P., Chatterjee, L. and Lakshmanan, T.R. (2003), "E-commerce, transportation, and economic geography", *Growth and Change*, Vol. 34 No. 4, pp. 415-32.
- Bauer, H.H., Falk, T. and Hammerschmidt, M. (2006), "eTransQual: a transaction process-based approach for capturing service quality in online shopping", *Journal of Business Research*, Vol. 59, pp. 866-75.
- Bienstock, C.C., Mentzer, J.T. and Bird, M. (1997), "Measuring physical distribution service quality", *Journal of the Academy of Marketing Science*, Vol. 25 No. 1, pp. 31-44.
- Boyer, K.K. (2001), "E-operations: a guide to streamlining with the internet", *Business Horizons*, Vol. 44 No. 1, pp. 47-54.
- Boyer, K.K., Hult, G.T. and Frohlich, M. (2003), "An exploratory analysis of extended grocery supply chain operations and home delivery", *Integrated Manufacturing Systems*, Vol. 14 No. 8, pp. 652-63.
- Brady, M.K. and Cronin, J.J. (2001), "Some new thoughts on conceptualising perceived service quality: a hierarchical approach", *Journal of Marketing*, Vol. 65, pp. 34-49.
- Burt, S. and Sparks, L. (2003), "E-commerce and the retail process: a review", *Journal of Retailing and Consumer Service*, Vol. 10, pp. 275-86.
- Carmines, E.G. and Zeller, R.A. (1979), *Reliability and Validity Assessment*, Series 07 No. 017, Sage, Newbury Park, CA.
- Chen, S. and Chang, T. (2003), "A descriptive model of online shopping process: some empirical results", *International Journal of Service Industry Management*, Vol. 14 No. 5, pp. 556-69.
- Chen, S. and Leteney, F. (2000), "Get real! Managing the next stage of internet retail", *European Management Journal*, Vol. 18 No. 5, pp. 519-28.
- Corsten, D. and Gruen, D. (2003), "Desperately seeking shelf availability: an examination of the extent, the causes, and the efforts to address retail out-of-stocks", *International Journal of Retail & Distribution Management*, Vol. 31 No. 12, pp. 605-17.
- Cronin, M.J. (1996), *Global Advantage on the Internet: from Corporate Connectivity to International Competitiveness*, Van Nostrand Reinhold, New York, NY.
- Davis-Sramek, B., Mentzer, J.T. and Stank, T.P. (2008), "Creating consumer durable retailer customer loyalty through order fulfilment service operations", *Journal of Operations Management*, Vol. 26, pp. 781-97.
- Delfmann, W., Albers, S. and Gehring, M. (2002), "The impact of electronic commerce on logistics service providers", *International Journal of Physical Distribution & Logistics Management*, Vol. 32 No. 3, pp. 203-22.
- Doherty, N., Chadwick, F.E. and Hart, C. (1999), "Cyber retailing in the UK: the potential of the internet as a retail channel", *International Journal of Retail & Distribution Management*, Vol. 27 No. 1, pp. 22-36.
- Emerson, C.J. and Grimm, C.M. (1996), "Logistics and marketing components of customer service: an empirical test of the Mentzer, Gomes and Krapfel model", *International Journal of Physical Distribution & Logistics Management*, Vol. 26 No. 8, pp. 29-42.
- Enders, A. and Jelassi, T. (2000), "The converging business models of internet and bricks-and-mortar retailers", *European Management Journal*, Vol. 18 No. 5, pp. 542-50.
- Fernie, J. and McKinnon, A.C. (2009), "The development of e-tail logistics", in Fernie, J. and Sparks, L. (Eds), *Logistics & Retail Management*, 3rd ed., Kogan Page, London, pp. 207-32.
- Fernie, J. and Sparks, L. (2009), "Retail logistics: changes and challenges", in Fernie, J. and Sparks, L. (Eds), *Logistics & Retail Management*, 3rd ed., Kogan Page, London, pp. 3-37.

- 
- Foley, P., Alfonso, X., Brown, K., Palmer, A., Lynch, D. and Jackson, M. (2003), *The Home Delivery Sector in the UK 1995 to 2010*, De Montfort University and the Freight Transport Association, Leicester.
- Grant, D.B. (2005), "The transaction-relationship dichotomy in logistics and supply chain management", *Supply Chain Forum: An International Journal*, Vol. 6 No. 2, pp. 38-48.
- Grant, D.B., Lambert, D.M., Stock, J.R. and Ellram, L.M. (2006), *Fundamentals of Logistics Management: First European Edition*, McGraw-Hill Education, Maidenhead.
- Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C. (1995), *Multivariate Data Analysis*, 4th ed., Prentice-Hall, Englewood Cliffs, NJ.
- IMRG (2006), "IMRG: 10% of retail sales now online", available at: [www.imrg.org](http://www.imrg.org) (accessed 26 May 2009).
- Koster, R.B.M. (2002), "Distribution structures for food home shopping", *International Journal of Physical Distribution & Logistics Management*, Vol. 32 No. 5, pp. 362-80.
- Lavin, M. (2002), "Christmas on the web: 1998 vs 1999", *Journal of Retailing and Consumer Services*, Vol. 9, pp. 87-96.
- Lee, G.G. and Lin, H.F. (2005), "Customer perceptions of e-service quality in online shopping", *International Journal of Retail & Distribution Management*, Vol. 33 No. 2, pp. 161-76.
- McKinnon, A.C. (2003), "The effects of ICT and e-commerce on logistics: a review of the policy issues", BPR Logistics: EU Thematic Network, available at: [www.bpr-logistics.trans.aueb.gr](http://www.bpr-logistics.trans.aueb.gr) (accessed 13 June 2006).
- McKinnon, A.C. and Tallam, D. (2002), "New crime threats from e-tailing: theft in home delivery channel", report prepared for the Products and Crime Task Force of the UK Government Foresight Programme, UK Government, London.
- Maltz, A. and Maltz, E. (1998), "Customer service in the distributor channel: empirical findings", *Journal of Business Logistics*, Vol. 19 No. 2, pp. 103-29.
- Mentzer, J.T., Flint, D.J. and Hult, G.T.M. (2001), "Logistics service quality as a segment-customized process", *Journal of Marketing*, Vol. 65, October, pp. 82-104.
- Mentzer, J.T., Gomes, R. and Krapfel, R.E. (1989), "Physical distribution service: a fundamental marketing concept?", *Journal of the Academy of Marketing Science*, Vol. 17 No. 1, pp. 53-62.
- Miles, M.B. and Huberman, M.A. (1994), *Qualitative Data Analysis*, Sage Publications, London.
- Min, S. and Wolfinger, M. (2005), "Market share, profit margin, and marketing efficiency of early movers, bricks and clicks, and specialists in e-commerce", *Journal of Business Research*, Vol. 50, pp. 1030-9.
- Mintel (2000), *UK vs US Online Shopping – June 2000*, Mintel International Group Limited, London.
- Nicholls, A. and Watson, A. (2005), "Implementing e-value strategies in UK retailing", *International Journal of Retail & Distribution Management*, Vol. 33 No. 6, pp. 426-43.
- Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1985), "A concept model of service quality and its implications for future research", *Journal of Marketing*, Vol. 49, Fall, pp. 41-50.
- Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1988), "SERVQUAL: a multiple-item scale for measuring customer perceptions of service quality", *Journal of Retailing*, Vol. 64 No. 1, pp. 12-40.
- Parasuraman, A., Zeithaml, V.A. and Malhotra, A. (2005), "A multiple-item scale for assessing electronic service quality", *Journal of Service Research*, Vol. 7 No. 3, pp. 213-33.

- Rabinovich, E. and Bailey, J.P. (2004), "Physical distribution service quality in internet retailing: service pricing, transaction attributes, and firm attributes", *Journal of Operations Management*, Vol. 21, pp. 651-72.
- Retail Logistics Task Force (2000), *Foresight 2000 @ Your Home: New Markets for Customer Service and Delivery*, UK Government, London.
- Reynolds, J. (2000), "e-Commerce: a critical review", *International Journal of Retail & Distribution Management*, Vol. 28 No. 10, pp. 417-44.
- Reynolds, J. (2002), "Charting the multichannel future: retail choices and constraints", *International Journal of Retail & Distribution Management*, Vol. 30 No. 11, pp. 530-5.
- Rowlands, P. (2001), "Why access in the key?", *elogistics*, No. 15, pp. 14-15.
- Rowlands, P. (2006), "Unattended delivery solutions – finally picking up?", *Efulfilment*, Spring, pp. 28-30.
- Tarn, J.M., Razi, M.A., Wen, H.J. and Perez, A.A. (2003), "E-fulfillment: the strategy and operational requirements", *Logistics Information Management*, Vol. 16 No. 5, pp. 350-62.
- Tih, S. and Ennis, S. (2006), "Cross-industry analysis of consumer assessments of internet retailers' service performances", *International Journal of Retail & Distribution Management*, Vol. 34 Nos 4/5, pp. 290-307.
- Trabold, L.M., Heim, G.R. and Field, J.M. (2006), "Comparing e-service performance across industry sectors: drivers of overall satisfaction in online retailing", *International Journal of Retail & Distribution Management*, Vol. 34 Nos 4/5, pp. 240-57.
- Van Vliet, P. and Pota, D. (2001), "Understanding online retail: a classification of online retailers", *Journal of Computer Information Systems*, Vol. 41 No. 2, pp. 23-9.
- Verdict Research Consultancy (2001), *How Britain Shops*, Verdict Research Consultancy, London.
- Verdict Research Consultancy (2008), "No sign of an e-tail slowdown", press release, April 16, Verdict Research Consultancy, London.
- White, H. and Daniel, E. (2004), "The future of online retailing in the UK: learning from experience", *Marketing Intelligence & Planning*, Vol. 22 No. 1, pp. 10-23.
- Wolfenbarger, M. and Gilly, M.C. (2003), "eTailQ: dimensionalizing, measuring and predicting eTail quality", *Journal of Retailing*, Vol. 79, pp. 183-98.
- Xing, Y. and Grant, D.B. (2006), "Developing a framework for measuring physical distribution service quality of multi-channel and 'pure player' internet retailers", *International Journal of Retail & Distribution Management*, Vol. 34 Nos 4/5, pp. 278-89.
- Xing, Y., Grant, D.B. and McKinnon, A.C. (2006), "Consumer perceptions of logistics service quality in online shopping", *Proceedings of the 18th NOFOMA Conference, Oslo, Norway, June 2006, e-proceedings*.
- Zeithaml, V.A., Parasuraman, A. and Malhotra, A. (2002), "Service quality delivery through web sites: a critical review of extant knowledge", *Journal of the Academy of Marketing Science*, Vol. 30 No. 4, pp. 362-75.

#### About the authors

Yuan Xing is a business development manager at London South Bank University. She has a PhD and MSc in logistics and supply chain management from Heriot-Watt University and her PhD study focused on physical distribution service quality in the online retail market. Her PhD thesis won the 2007 Emerald Outstanding Doctoral Research Awards in the category of logistics and supply chain management and also won the 2007 James Cooper Memorial Cup PhD Award from

the Chartered Institute of Logistics and Transport (UK). She is originally from Dalian, China and has a BSc in International Business and Transport from Dalian Maritime University.

David B. Grant is Professor of Logistics and Director of the University of Hull Logistics Institute. His doctoral thesis investigated customer service, satisfaction and service quality in UK food-processing logistics and received the James Cooper Memorial Cup PhD Award from the Chartered Institute of Logistics and Transport (UK) in 2003. His research interests include customer service and satisfaction, service quality, retail logistics, logistics and supply chain relationships, reverse, closed-loop and sustainable logistics, logistics in SMEs, and the integration of logistics and marketing. He has published over 95 papers in various refereed journals, books and conference proceedings and regularly referees articles for many academic journals and conferences. David B. Grant is the corresponding author and can be contacted at: [d.grant@hull.ac.uk](mailto:d.grant@hull.ac.uk)

Alan McKinnon is Director of the Logistics Research Centre at Heriot-Watt University. He graduated from the universities of Aberdeen, British Columbia and London, has been researching and teaching in freight transport and logistics for 30 years and has published extensively in journals and books. He has undertaken numerous research and consultancy studies for public and private sector organisations and been an adviser to several UK government departments, UK and Scottish parliamentary committees, the European Commission, European Conference of Ministers of Transport, International Energy Agency and OECD. He was chairman of the UK government's Retail Logistics Task Force from 2000-2002 and has been a member of its Freight and Logistics Group since 2003.

John Fernie is Professor of Retail Marketing at Heriot-Watt University. He has written and contributed to numerous textbooks and papers on retail management, especially in the field of retail logistics and the internationalisation of retail formats. He is Editor of the *International Journal of Retail & Distribution Management* and on the editorial board of two other journals. He is a Fellow of the Chartered Institute of Logistics and Transport and an active member of the Chartered Institute of Marketing in the UK. In 2001 he became a member of the Logistics Directors Forum, a group of leading professionals in supply chain management and logistics in the UK.