

**An Analysis of Physical Distribution Service Quality In The
Online Retail Market**

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ABSTRACT

The aim of this thesis is to analyse physical distribution service quality in the online retail market for non-food products. Internet shopping has experienced very rapid growth in recent years. Many 'pure player' retailers that only sell over the Internet have emerged. Traditional retailers also use the Internet to supplement their stores and thus sell through multiple channels. Service quality, especially physical distribution service quality, is an important way for retailers to differentiate themselves in this increasingly competitive online retail market. A product purchased virtually online cannot be utilised unless it is delivered to the consumer at the right place, at the right time and in the right condition. Home delivery service is thus one of the most crucial elements affecting consumers' perception and satisfaction. Physical distribution service quality in conventional markets is discussed at length in the logistics literature but its role in online retailing has so far received limited attention. There is no comprehensive theoretical framework analysing e-physical distribution service quality (e-PDSQ) and very few empirical studies have been conducted in this area. Furthermore, no study has been undertaken to compare e-PDSQ between pure player and multi-channel retailers. This thesis addresses these gaps in the literature providing both demand- and supply-side perspectives.

An e-PDSQ framework consisting of four dimensions and twelve variables was developed from the literature, which was tested and validated using a rigorous two-stage methodology. The first stage of the methodology involved a pilot consumer survey of 1000 households. This confirmed that the e-PDSQ framework was appropriate, though suggested that three more variables should be added. The second stage of the methodology comprised the main consumer survey of 2000 households. This explored differences in e-PDSQ between multi-channel retailers and pure player from the consumer's perspective. Pure players were perceived to provide better e-PDSQ than multi-channel retailers. The supply side empirical study consisted of company interviews: sixteen retailers and logistics service providers (LSPs) are interviewed to gain an insight into the e-PDSQ from their perspectives. Most home delivery issues that concern consumers are addressed and highlighted by the companies. LSPs play an important role in the home delivery market as most retailers outsource logistical functions but they vary in their level of e-fulfilment experience, specialties, service offerings and relationships with retailers, all of which contribute to the observed e-PDSQ differences. Retailers and LSPs are constrained by issues such as the trade-off between costs and services, system integration, drop density and volumes. Recommendations on how to improve e-PDSQ based on the framework and findings are proposed.

The research indicates that pure players provide better e-PDSQ for now but that multi-channel retailers may soon match or exceed this performance. The thesis has practical and managerial implications for retailers and LSPs and should help them to improve their understanding of consumers' perception and deliver better e-PDSQ.

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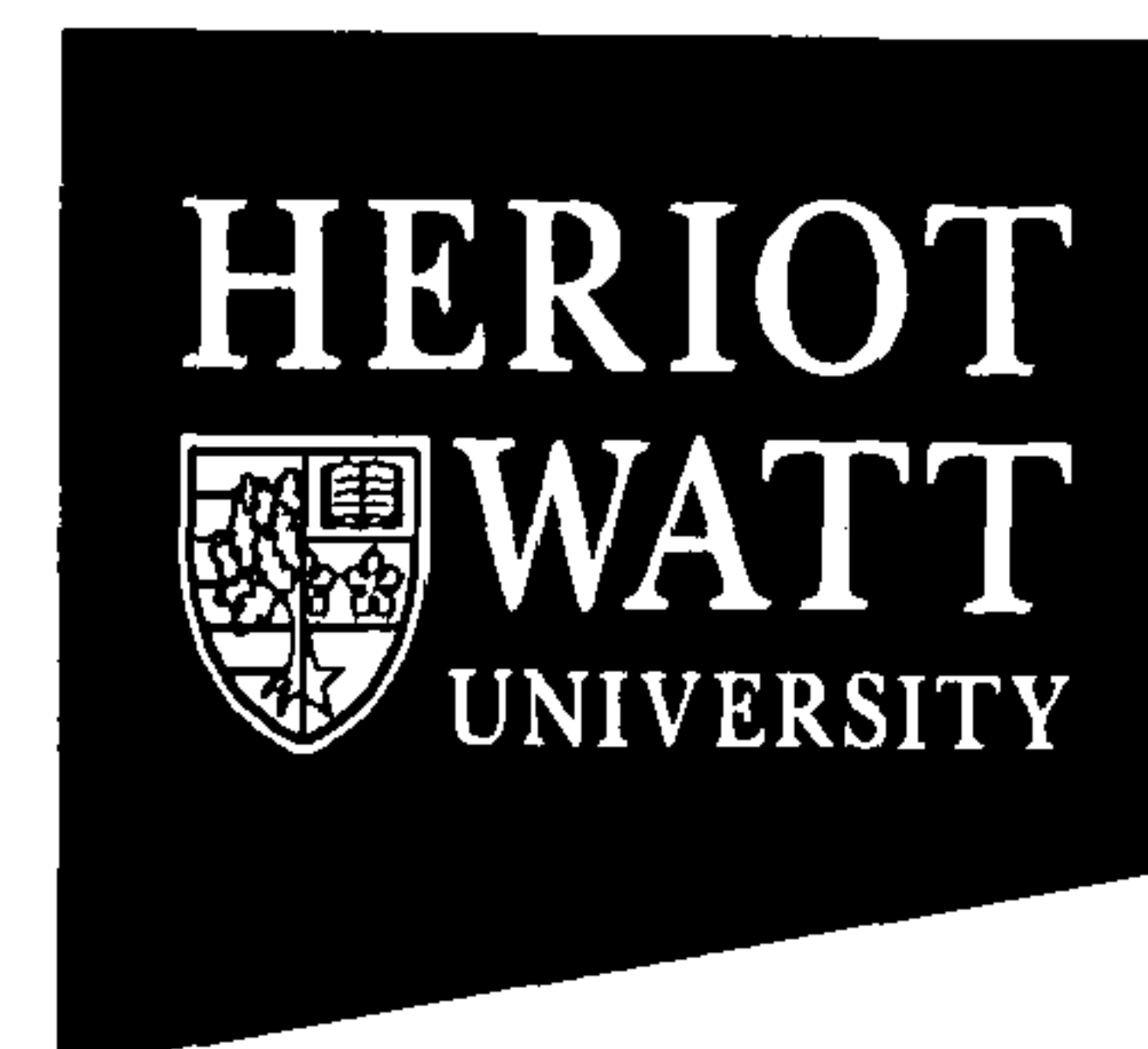
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CHAPTER ONE: INTRODUCTION

1.1 RESEARCH BACKGROUND

During the past decade, the Internet has created a retail and consumer revolution by providing a new channel for shopping. The Internet retail market is growing quickly in the UK and covers a large assortment of services and products. In 2000, the Department of Trade and Industry (Retail E-commerce Task Force 2000) made an analysis of four scenarios for business-to-consumer (B2C) e-commerce growth in the UK: explosive, dynamic, active and sluggish. In retrospect, the development of the online sales channel in the UK can be described as 'dynamic', characterised by:

- high growth rate: e-retail sales have grown 2000% since 2000 (including both service and goods industry) and have grown at an average year-on-year rate of 45% for the first 6 months in 2006 (IMRG 2006c);
- high value of transactions: the Internet sales are estimated to reach £30 billion in 2006 and in May 2006 the Internet accounts for ten percent of retail sales (IMRG 2006c);
- high Internet penetration rate and relatively low levels of social exclusion from e-commerce as 59% of the UK population in 2005 had access to the Internet (InternetWorldStats 2005);
- eroding differences between different channels of shopping as online and offline retail sales are interactively impacted by each other. Ten percent of conventional sales are triggered by Internet research and stimuli (IMRG 2006c).

In line with Internet shopping development, White and Daniel (2004) called for more research to explore consumers' expectations of the online retailing service and retailers' provision of online retailing services. Service quality has been an important research topic and well established in the marketing literature. It is closely related to customer satisfaction, customer retention, cost and profitability issues.

Throughout the period of this continuous growth, e-retailers have to ensure they maintain and improve customer service, and offer consumers a pleasant online shopping experience. There have been a small but increasing number of studies focusing on

online shopping service quality, and consumers' perception of service performance and satisfaction (Trabold et al. 2006, Tih and Ennis 2006, Bauer et al. 2006, Parasuraman et al. 2005, Lee and Lin 2005, Yang et al. 2004, Wolfinbarger and Gilly 2003, Chen and Chang 2003, Zeithaml et al. 2002). Many of these studies focus on areas such as finance, travel and banking which are not concerned with the home delivery service. According to IMRG (2006b), online retailing for physical products accounts for two thirds of the total online sales. These online purchases involve the handling and transferring of physical products (packing, picking, dispatching, delivering, returning and collection). A product purchased online or 'virtually' cannot be utilised unless it is delivered to the consumer at the right place, at the right time and in the right condition.

Other e-service quality studies that deal with physical goods tend to focus more on the front end of order transactions such as website design, information content and payment security rather than the back end of order fulfilment. A review of 24 studies on e-service quality showed that order fulfilment is the least mentioned e-service quality dimension (Trabold et al. 2006, Bauer et al. 2006, Parasuraman et al. 2005, Lee and Lin 2005, Wolfinbarger and Gilly 2003, Chen and Chang 2003, Janda et al. 2002, Novak et al. 2000, Dabholkar 1996). Physical distribution of products in the e-retailing environment is an area that is clearly under-researched. Physical distribution service by e-retailers is a vital component of customer service as it is the only way to get goods to consumers. It is considered to be one of the most crucial elements affecting consumers' online shopping satisfaction (White and Daniel 2004, Burt and Sparks 2003, Lavin 2002). The provision of good home delivery services can also build trust, generate more sales and secure customer loyalty.

Physical distribution is generally regarded as part of the general logistics concept, i.e. outbound logistics, dealing with the final distribution of finished products (Rushton et al. 2000). There have been a few studies focusing on physical distribution service quality in the conventional business-to-business (B2B) context (Mentzer et al. 1989, 1999, 2001, Emerson and Grimm 1996, Bienstock et al. 1997) but very few empirical studies in the B2C online context with the exception of Rabinovich and Bailey's work (2004). There is no comprehensive framework available in the literature to evaluate e-retailers' physical distribution service quality.

Furthermore, there are very few comparative studies investigating service performance of different types of e-retailers. Most traditional retailers have adopted the online channel to supplement their high street sales and thus they become multi-channel retailers (Burt and Sparks 2003). Pure players are those who do not have an up-front store presence and sell from the Internet only (Boyer 2001). Just more than a decade ago, the concept of a pure Internet player did not exist. Today, it has mushroomed all over the world. The rapid growth of pure players has initiated a debate as to which model is more efficient and provides better service (White and Daniel 2004, Klinger et al. 2003).

Physical distribution service quality is obviously a crucial factor in deciding which retailing format is likely to be more popular. Consumers are the sources of company profit and how they perceive retailers' delivery service and how they evaluate their shopping experience are key to a retailer's survival and success. Faced with an increased number of orders, retailers find it a massive challenge to streamline the despatch and delivery process and provide satisfactory fulfilment service to consumers. No empirical studies have systematically reviewed and compared the physical distribution performance between multi-channel retailers and pure players.

This research aims to address the above two gaps in the literature, i.e. to create a framework to evaluate and compare the physical distribution service quality between multi-channel retailers and pure players. The research discusses e-physical distribution service quality (e-PDSQ) from the consumer's perspective in non-food retailing sectors. There has been much research done on e-grocery distribution and delivery (Wilson-Jeanselme and Reynolds 2006, Teller et al. 2006, Wilson-Jeanselme and Reynolds 2005, Kämäräinen 2003, Yrjölä 2003, Punakivi 2003, Koster 2002, Ring and Tigert 2001, Tanskanen et al. 2002), while in comparison little has been done in the non-food area. Online shopping for non-food products is becoming less constrained by the 'feel and touch' factor as consumers are getting used to the idea of buying almost everything online. Also, many retailers are working on the return process to make it easier for consumers. The next section introduces the research questions to be addressed.

1.2 RESEARCH QUESTIONS

Seven research questions were proposed.

RQ1: What are the e-PDSQ dimensions against which consumers rate e-retailers and how important are these dimensions?

RQ2: What are the differences in e-PDSQ between pure players and multi-channel retailers across these dimensions from the consumer's perspective?

RQ3: What are the actual home delivery performances achieved by retailers and LSPs against the e-PDSQ framework?

There may be a gap between consumers' perceptions and the actual e-PDSQ. Thus it is important to find out the actual home delivery performances.

RQ4: What are the factors responsible for any e-PDSQ differences?

It is always important for research to find out not just the phenomenon but also the causes behind the phenomenon. Factors such as organizational structure, consumers' expectation, pricing, product range and collaborative partners may play a role in shaping consumers' perception.

RQ5: How much do logistics service providers contribute to any e-PDSQ differences?

The logistics service provider (LSP) is singled out as an important actor because it plays an important role in forming consumers' perception of the home delivery service quality. Almost all e-retailers outsource part of the e-fulfillment process to LSPs (Rowlands 2003), activities ranging from warehousing, inventory management, packaging, last mile delivery to return processing. The home delivery market is very dynamic and it is worthwhile to explore how active LSPs are, how they work with e-retailers and how good e-PDSQ they provide.

RQ6: What are the problems and constraints in the home delivery market?

RQ7: How can companies address the observed problems and constraints?

The research needs to have practical implications to be meaningful. By analyzing problems in the industry and proposing possible solutions to improve the service quality, the research thus has important managerial implications.

1.3 RESEARCH METHODOLOGY

On the one hand, the research is explanatory regarding the variables and constructs of e-PDSQ, which will be developed from the traditional PDSQ literature. On the other hand, this research is exploratory in finding out reasons behind the e-PDSQ differences between multi-channel retailers and pure players. The study is conducted in a B2C e-commerce context, a phenomenon that is getting much attention but still not very well known. A critical realist paradigm is adopted which suits well with the explanatory and exploratory nature of the research. A combination of quantitative and qualitative approaches is considered to be consistent and appropriate.

The empirical study was divided into two parts. The first part involved consumer surveys to find out consumers' expectations and perceptions of e-PDSQ provided by non-food e-retailers. It adopted a two-stage method proposed by Churchill (1979) and Dunn et al. (1994) for marketing and logistics scale and construct development. The first stage was to specify the domain, generate variables from a literature review, conduct a pilot study and validate the variables. The second stage was to conduct the main study that assesses validity of the pilot study findings and develops norms.

The postal survey method, one of the most frequently used methods in logistics research was implemented at each stage. It is considered to have high external validity and is useful to generalise to larger samples (Mentzer and Kahn 1995). An e-PDSQ framework with certain dimensions and variables was derived from the literature and tested in the pilot survey. Exploratory factor analysis (EFA) was used to validate and refine the framework. EFA is a statistical tool generally used to discover the factor structure of a measure and to examine its internal reliability (Field 2000, Hair et al. 1995). The main consumer survey study, representing the second stage of the Churchill framework, was followed with a bigger sample. The refined e-PDSQ framework was used to test

consumers' perceptions and find out the e-PDSQ differences between multi-channel retailers and pure players.

The second part of the empirical study entailed company interviews which were designed to find out the factors causing e-PDSQ differences and gain an insight into the development of the home delivery market. The in-depth interview is the most fundamental of all qualitative methods of data collection and can yield very rich information (Easterby-Smith et al. 2002). E-retailers, LSPs and e-fulfillment industry experts were interviewed to gain multiple perspectives. Content analysis was used to analyse data. It focuses on key issues and looks for common themes and patterns to try to make sense of the information (Guion 2006). Content analysis is a systematic, replicable technique which is good for coding the data and identifying common themes (Denzin and Lincoln 2000, Stemler 2001).

The interview results yielded information on the actual e-PDSQ performances provided by retailers and LSPs. LSPs' roles in the home delivery service were also explored. The constraints and problems in the market were discussed from both the retailers' and LSPs' perspectives. And then suggestions were proposed to improve the service offerings.

1.4 THESIS OUTLINE

The thesis consists of eleven chapters in total. Chapters Two to Five review the background literature and introduces the theoretical development of the e-PDSQ framework. Chapters Six to Ten presents the research undertaken and discusses the empirical findings. Chapter Eleven concludes the thesis, discusses its various contributions and gives directions for future research.

1.4.1 Background Literature

Chapter Two introduces the concepts of logistics, physical distribution, customer service, and service quality, the most fundamental concepts on which this study is based. Physical distribution service quality, a core concept of this dissertation, is also discussed in a traditional business context.

Chapter Three introduces the development of B2C e-commerce in the UK retailing industry. The features and consumers characteristics of B2C e-commerce are discussed. Traditional 'brick and mortar' retailers' adoption of e-commerce is examined. In comparison, pure players' emergence and development are discussed. The UK e-commerce market is also analyzed by product sectors.

Chapter Four introduces logistics outsourcing by online retailers. The UK third party logistics market is discussed and classified. The traditional distribution channels and their changes brought about by the e-commerce environment are described. The impact of e-commerce on LSPs is discussed and the activities LSPs take in the e-environment are briefly introduced.

Chapter Five develops the research framework. The chapter starts with a systematic review of the e-service quality literature, which introduces e-service quality dimensions and variables. E-PDSQ elements are then distilled from the e-service quality literature and with a review of the traditional PDSQ dimensions and variables, an e-PDSQ framework consisting of four dimensions and twelve variables is created.

1.4.2 The Empirical Research

Chapter Six elaborates on the research objectives and methodology. This chapter justifies the critical realist paradigm and a mixed usage of both quantitative and qualitative approaches by analyzing the study's ontological, epistemological and methodological propositions.

Chapter Seven discusses the demand side of the empirical study, i.e. the consumer surveys. Both stages of Churchill's methodology are discussed in this chapter. Firstly the pilot survey utilising a postal survey sent to 1000 households is described and the findings summarized. EFA is used to validate the framework. Secondly the main study based on a sample of 2000 households is followed and the refined framework is tested. Consumers' expectations and perceptions of e-retailers' e-PDSQ performances are explored and the e-PDSQ differences between multi-channel retailers and pure players

are analysed. Relationships between e-PDSQ and order value, delivery price and product category are analysed to see whether these factors contribute significantly to the discovered e-PDSQ differences.

Chapter Eight starts with the discussion of the supply side of the empirical study, i.e. the company interviews. Sixteen companies including e-retailers, LSPs and non-company e-fulfillment industry specialists were interviewed. This chapter discusses the actual home delivery service provided by retailers and LSPs against the e-PDSQ framework. It further explores the factors that may have caused the e-PDSQ differences between multi-channel retailers and pure players. The interviewees give their own views on this issue.

Chapter Nine analyses LSPs' involvement in the home delivery market. LSPs are classified and LSPs' roles and functions in the home delivery market are described. LSPs' relationships with retailers are also explored.

Chapter Ten examines constraints and problems in the home delivery market and synthesises the result of consumer surveys and company interviews. Measures that can be taken to improve the service quality are suggested. Detailed suggestions are proposed based on the e-PDSQ framework's four dimensions.

1.5 THE SCOPE OF THE RESEARCH

This research is concerned with online shopping of non-food products only and e-grocery is not included in the domain of the research. The research focuses on the outbound logistics of B2C e-commerce, and the inbound logistics, i.e. the sourcing of materials or products is not considered. The limitations of the research will be discussed in the conclusion chapter.

CHAPTER TWO: LOGISTICS, PHYSICAL DISTRIBUTION AND CUSTOMER SERVICE QUALITY

2.1 INTRODUCTION

This chapter begins a review of the background literature that underpins this study. Firstly, the definitions of logistics and supply chain management are introduced, before their relationships and differences are explored. Then the concepts of physical distribution and distribution channels are examined. Next, a discussion of customer service and its relationship with logistics is provided, followed by explanation of service quality and a few well-known service quality models. Fifth, physical distribution service quality, one of the core concepts of this dissertation is discussed in a traditional business context. Lastly, conclusions to this chapter are drawn.

2.2 THE LOGISTICS DISCIPLINE

2.2.1 Definition of Logistics

There are many ways of defining logistics. Christopher (1998 p.4) employs the following marketing oriented definition for logistics management.

“Logistics is the process of strategically managing the procurement, movement and storage of materials, parts and finished inventory (and the related information flows) through the organisation and its marketing channels in such a way that current and future profitability are maximised through the cost-effective fulfillment of orders.”

This definition is concerned with the activities and objects of logistics and highlights the relationships between logistics and marketing. The definition emphasises the importance of logistics to the profitability of a company in an economic perspective. Logistics is inherently linked to and affect almost every function within an organisation and is a key part of the integrated process (Waters 1999a). Logistics perceives a role in co-ordinating materials, products and information flow (Schary 1999). Figure 2.1 illustrates that the scope of logistics spans the organisation, from the management of

raw materials, i.e. inbound logistics, through to the delivery of the final product, i.e. outbound logistics (Christopher 1998).

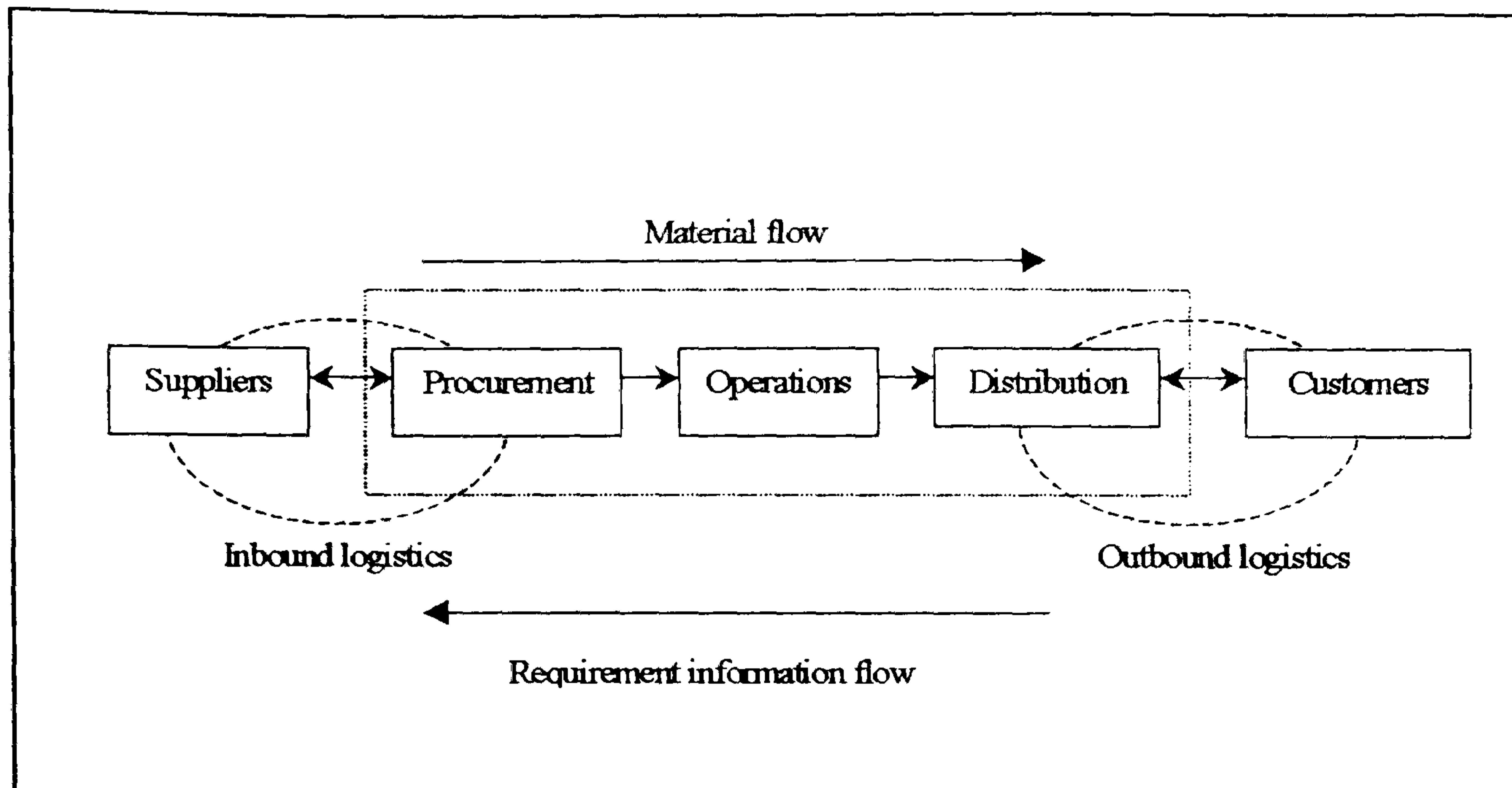


Figure 2.1: Logistics Management Process

(Adapted from Christopher 1998)

The Council of Supply Chain Management Professionals (CSCMP 2006), a leading professional organisation for logistics personnel, defines logistics as follows:

“Logistics management is that part of the Supply Chain Management that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers’ requirements.”

The above definition is somewhat broadened and is thus adopted by this thesis. It identifies logistics as part of supply chain management and proposes the concept of reverse logistics. The definition also incorporates service as an object of logistics and recognises the starting and end point of logistics process. Customer service is highlighted. An insight of the relationship between logistics and supply chain management is also provided.

2.2.2 Definition of Supply Chain Management

With the benefits of the logistics concept recognised, there is a need to “extend the logic of logistics upstream to suppliers and downstream to the final customers” (Christopher 1999 p.29). It leads to the concept of supply chain management. Mentzer et al. (2001)

have proposed that supply chain management definitions can be classified into three categories: a management philosophy, implementation of a management philosophy, and a set of management processes. Firstly, supply chain management as a management philosophy is a systems approach, adopts a strategic orientation towards collaboration and focuses on customer value and satisfaction (Mentzer et al. 2001). An example could be the definition from Christopher (1998 p.18) as follows:

“The management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole.”

This definition of supply chain management focuses upon the management of relationships so that a more profitable outcome for all parties in the chain could be achieved. The definition by Harrison and van Hoek (2002 p.6) also focuses on the alignment between supply chain members, which can result in delivering customer value at less cost. The similar definition is:

“The alignment of upstream and downstream capabilities of supply chain partners to deliver superior value to the end customer at less cost to the supply chain as a whole.”

Christopher (1998) again argues that the chain is increasingly driven by the market, so the word ‘supply’ should be replaced by ‘demand’. Also, the word ‘chain’ should be replaced by ‘network’ due to the multiple number of partners and the complex nature of their relations and connections. So he (1998 p.19) extends the concept to:

“A network of connected and interdependent organisations mutually and co-operatively working together to control, manage and improve the flow of materials and information from suppliers to end users.”

The above definition suggests supply chain management consists of more than the activities of any individual corporate function (Lambert et al. 2005).

The second classification of supply chain management definition encompasses the various activities necessary to constitute and implement the philosophy (Mentzer et al. 2001) and the activities are shown in Table 2.1.

1. Integrated Behaviour
2. Mutually Sharing Information
3. Mutually Sharing Risks and Rewards
4. Cooperation
5. The Same Goal and the Same Focus on Serving Customers
6. Integration of Processes
7. Partners to Build and Maintain Long-Term Relationships

Table 2.1: Supply Chain Management Activities

(Source: Mentzer et al. 2001 p.8)

Thirdly, as opposed to focusing on the activities that constitute supply chain management, some definitions may focus on management processes (Mentzer et al. 2001). The CSCMP (2006) defines supply chain management as series of flowing processes and identifies who the channel partners can be. Given the broadness of the activities and scope of the supply chain, managing it can be very challenging.

“The planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes co-ordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies.”

Pulling together the three disparate aspects of supply chain management, Mentzer et al. (2001 p.18) define supply chain management as:

“The systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole.”

The definition leads to the development of their conceptual model illustrated in Figure 2.2. In the global environment, supply chain management synchronises the inter-organizational and functional coordination, to facilitate the flows of products, services, information financial resources, demand and forecasts. Customer satisfaction is critical to achieve profitability and competitive advantage.

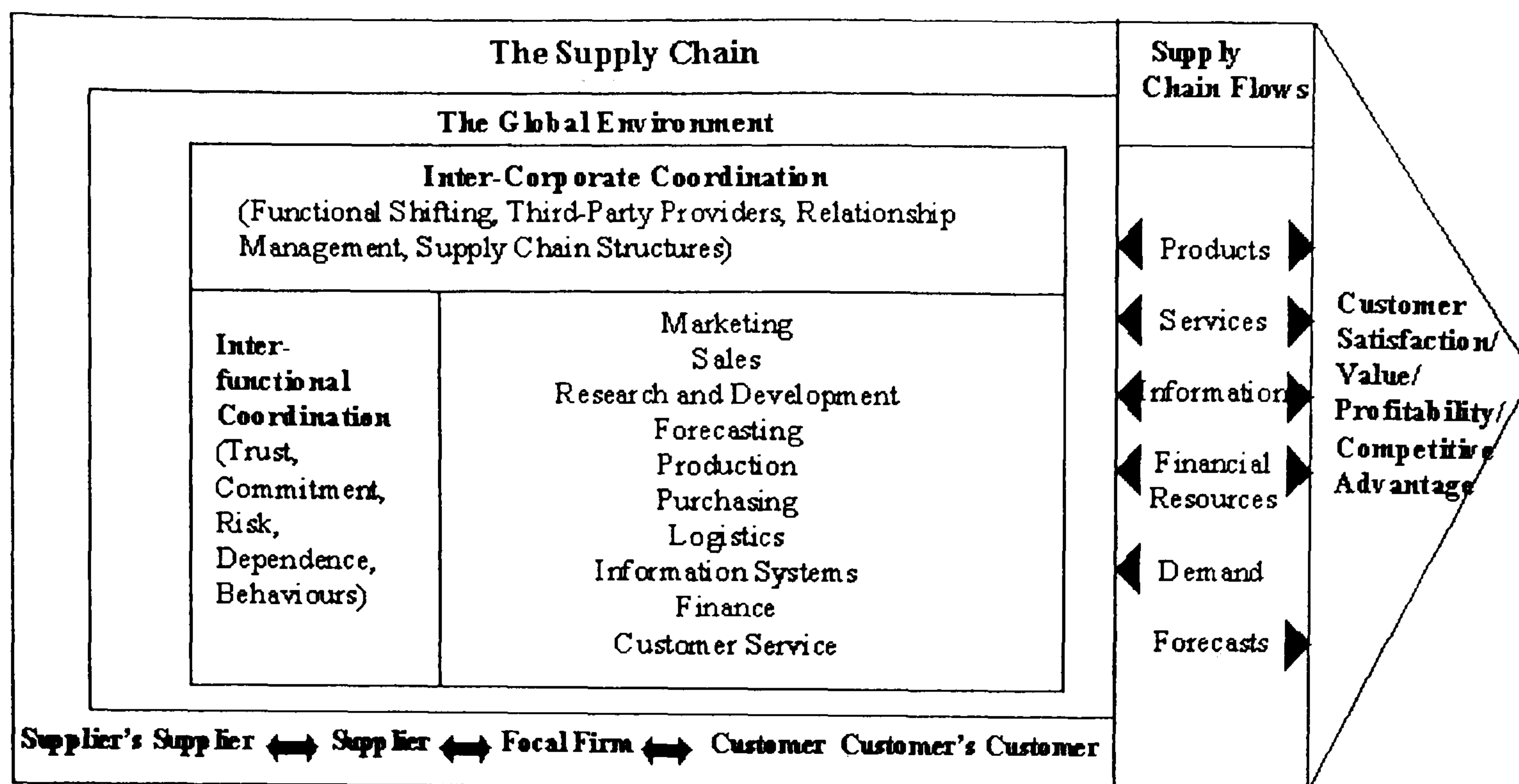


Figure 2.2: A Model of Supply Chain Management

(Source: Mentzer et al. 2001 p.19)

The concept of supply chain has been considered as an extension of logistics and it identifies the “complete set of activities and organisations and their connecting supply links: transport, telecommunications and personal interchange, even to the inclusion of the product development process” (Schary 1999 p.14). Kotler (1997) referred to supply chain management as a broader concept than logistics as it integrates the entire value-adding processes. Logistics exercises co-ordination under supply chain management. According to Hines (1999 p.49), the key difference between logistics and supply chain management “is not that they cover a different collection of firms... but that supply chain management encompasses a range of other major or support processes...”

Supply chain scope is not limited to the immediate supply and client partners but should involve as far as possible towards raw material suppliers and end users. Companies no longer compete as individual entities but as a whole supply chain (Christopher 1998). Most opportunities arise when supply chain partners interface one another efficiently (Hines 1999). Supply chain either creates competitive advantage or supports advantage created in other areas (Schary 1999). Mentzer et al. (2001) have summarised the reasons contributing to the popularity of the supply chain management concept. The market place uncertainty, caused by global orientation, customers’ requirement of better and faster services and increased competition focused on quality and time, demands more

flexibility in supply chain relationships. Also the use of integrated information systems in the supply chain is another distinct difference from the concept of logistics (Rushton et al. 2000). Information technology enables the visibility of product demand and supply and facilitates the supply chain to be managed as a whole.

2.2.3 The Evolution of Logistics

Management of logistics has undertaken radical changes (Schary 1999). Traditionally, organisations did not give much attention to their logistics, but now organisations attach more and more importance to it, which has become an essential part of the business process.

Logistics has progressively evolved from an original operational role combining transport, handling and warehousing functions, to an integrated chain enabling firms to control the flow of materials, products and information from downstream to upstream (Fabbe-Costes and Colin 1999). Kent and Flint (1997) discussed the evolution of logistics thought. They identified six eras marking the crucial development of logistics thought. In Era 1, starting with the turn of this century, under the influence of agriculture, the attention centred on transporting goods from the farm to the market. Era 2 was characterised by logistics being called 'distribution' and treated as segmented functions. In Era 3 began the integration of functional areas with the total cost or system approach applied to the analysis of the firm. Era 4 witnessed the emergence of the perspective of customer focus. The customer was regarded as the primary focus of the firm and physical distribution became a component of customer service. In Era 5, logistics has increased its influence and started to be considered a key means of differentiation for the firm, which continued through the present. Era 6 is based on the speculation of the future with the emphasis on behavioural issues such as consumer behaviour.

Rushton, Oxley and Croucher (2000) reviewed the development of logistics and distribution from a historical perspective. They identified seven distinct stages that started from the 1950s and early 1960s, when distribution systems were largely unplanned, unformulated and poorly controlled. In 1960s and the early 1970s, a system approach towards logistics began to develop and there was recognition of the

interrelated nature of logistical activities. The 1970s was considered as an important decade as a series of major changes happened in the distribution industry, including the marked increase in the power of retailers as opposed to manufacturers and suppliers. Also distribution was incorporated into the functional management structure of an organisation. The 1980s saw an increase in professionalism within distribution and the growth of the third-party logistics industry. In the late 1980s and early 1990s, thanks to the emergence of new information technology, there was further improvement in customer service and cost control. The 1990s embraced the concept of supply chain management and started a new era of partnership. 2000 and beyond was considered to be full of challenges and opportunities, with logistics regarded as a key business enabler. The concept of logistics has been evolving and nowadays logistics is an integral part of an organisation's operation and strategy development. The next section discusses the current status of logistics.

2.2.4 The Current State of Logistics

Manheim and Medina (1999 p.85) argued that to examine the strategic position of logistics, three related issues have to be looked into:

1. The changing structures of globally competing organisations;
2. The critical role that information technology plays in today's competitive environment; and
3. The strategic role of people

Today virtually all major firms have a significant presence outside their country of origin (Waters 1999b) and an international presence necessitates a broader perspective. A multi-national company may source and manufacture from low cost Asian countries, then distribute goods to Europe and sell them there. Globalisation links various sourcing places, production points and markets together across national boundaries (Schary 1999), a trend resulted in an emphasis on time and quality-based competition (Mentzer et al. 2001). It intensifies the world-wide co-operation and requires the integration of business functions, which leads to a consensus over the importance of logistics. As a consequence of changes in sourcing, manufacturing, distribution and merchandising, organisations have to re-evaluate their structures, from strategic level, i.e. the role of logistics management, to operational level, e.g. the number and location of depots and

the transportation system etc. Globalisation creates opportunities for logistics to be an innovator and enabler in facilitating the business.

The recognition of the crucial role that supply chain plays in the business is partly the result of the increasing power of the information systems. The development of information technology and the internet provides enormous opportunities and is considered as the domain that has the strongest synergy with logistics (Fabbe-Costes and Colin 1999). New services and product ideas receive international exposure more quickly. Various supply chain management software and tools have emerged and provide critical support to intra- and inter-organisational communication and collaboration.

Manheim and Medina (1999) argued that information itself is hardly a major source of sustainable competitive advantages. People are the most fundamental building blocks of an organisation and they carry out various functions including logistics. It is people's skills and knowledge of implementing information that enables logistics to advance. They suggested that people are the most important resources and with the logistics environment changing so quickly, they need training to improve their skills. Information systems can be used to enhance people's ways of working. Nowadays the electronically facilitated network provides real-time platform for people to interact and collaborate.

Motivated by globalisation, companies are eager to develop logistics which is not only a prerequisite but can provide them with the differentiated advantages. The development of logistics is further facilitated by highly trained professionals and advanced technology. Good logistical operation supports other functions of an organisation such as production, marketing, sales and customer service.

2.2.5 Summary

This section discussed the definition of logistics and supply chain management. Supply chain management is an extension of the logistics concept and emphasises more on partnership. The evolution of logistics was described in a chronic sequence. Logistics has been attached more importance with time progressing, especially in an environment

where companies compete globally rather than nationally. New information technologies have been developing and serve as fundamental building blocks of logistics together with logistician professionals.

2.3 PHYSICAL DISTRIBUTION

2.3.1 Definition of Physical Distribution

Bowersox et al. (1968) noted that the first use of the term ‘physical distribution’ was probably raised by Clark in his *Readings in Marketing* (1924). Physical distribution (PD) is generally regarded as part of the general logistics concept (Mentzer et al. 1997, 1999, 2001), i.e. outbound logistics, dealing with the final distribution of finished products (Rushton et al. 2000). According to McKinnon (1989 p.1), PD is the “collective term for the series of inter-related functions (principally transport, stockholding, storage, goods handling and order processing) involved in the physical transfer of finished goods from producer to consumer, directly or via intermediaries.” Figure 2.3 shows a logistics evolutionary model which indicates the components that constitute physical distribution.

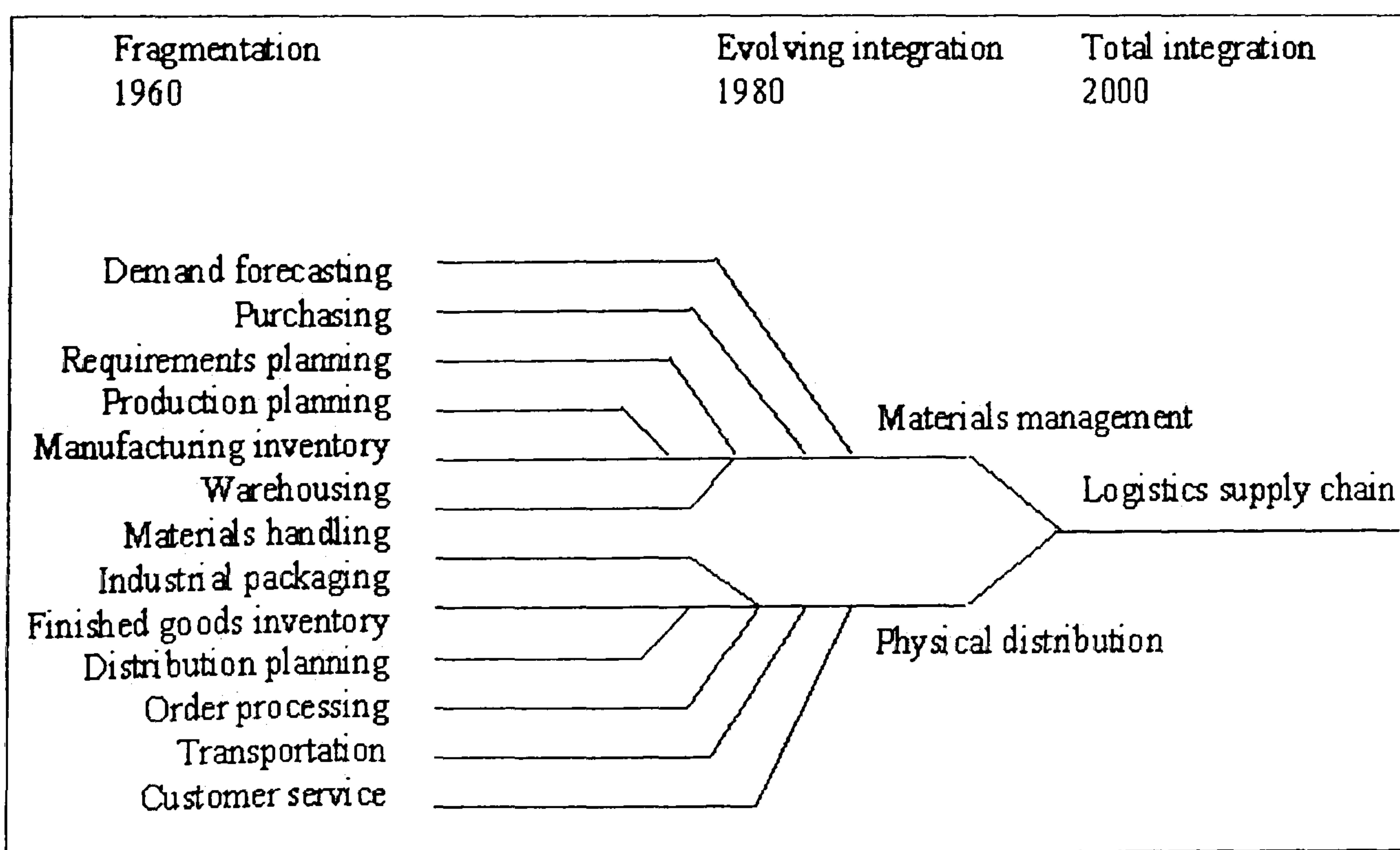


Figure 2.3: Logistics Evolutionary Model

(Adapted from Hines 1999)

McKinnon (1989) differentiated 'logistics' from 'physical distribution' by defining the latter to be concerned with finished goods only. Rushton et al. (2000) used an equation to show the relationship between logistics and distribution. "Logistics = Supply + Materials management + distribution" (p.4) Williamson et al. (1990) divided logistics service into three areas: materials management, conversion management and physical distribution management. Materials management deals with procurement activities, involving the relationship between the company and its suppliers. Conversion management refers to the internal operations within the firm, involving relationship between functions. Physical distribution management is concerned with the relationship between the firm and its customers. It is outbound logistics activity and it concerns with finished products.

PD provides time, place and form utilities which are crucial in customer service. However, from a historical perspective, it is only relatively recently that the role of physical distribution service (PDS) as being vital in business has come to be recognised (McKinnon 1989, Rushton et al. 2000). Mentzer et al. (1989) examined the evolution of the importance of PDS in buyer's perception and identified Shaw (1915) and Clark's (1922, 1924) contribution to the literature. Shaw (1915) referred to distribution as one of the three major business activities with the other two being production and the facilitating activities supporting production and distribution. Clark (1922) contributed to the understanding of distribution by dividing distribution into transportation and storage functions. However, the study of PD remained sparse and fragmented until the second half of the twentieth century when interest in PD was triggered. One important factor should be attributed to the emergence of new computer capabilities and analytical methods, which provided tools to "investigate physical distribution alternatives" (Mentzer et al. 1989 p.54). The other factor was the economic recession which occurred in the late 1950s and 1960s. As a result, competition became fierce so that companies realised the need to control costs and raise efficiency by means of distribution (McKinnon 1989).

Before the early 1960s, distribution systems in manufacturing and retailing industries were "unplanned and unformulated" (Rushton et al. 2000 p.8). The concept of PD was not developed until the 1960s and 1970s, when a systems approach to link the physical activities together and a total cost perspective were employed. Some companies also

included PD in the functional management structure of organisations (Rushton et al. 2000). In the meanwhile, several academic studies were undertaken to examine the nature of PD. The penalty of ignoring PD was gradually recognised and the importance of it identified. In two studies (Klass 1961, Perreault and Russ 1974), PDS was ranked as the second most important element in the industrial purchase process, with product quality ranked first. Dickson (1966) found that delivery and performance were always among the top five factors in contributing to the vendor selection decision even when product type varied. Another study examining the importance of determinants of industrial buyers' vendor selection indicated that delivery reliability was the second most important determinant (Yoram et al. 1968). Hutchinson and Stolle (1968) suggested that although the importance of PD was likely to vary by industry, it was considered to be important.

PD not only affects industrial buying decisions and creates new sales opportunities (Jackson et al. 1986, Stewart 1965), but also contributes to cost reductions considering the high percentage of PD cost to a firm's sales revenue (Stewart 1965, Hutchinson and Stolle 1968). More importance was attached to PD by companies in the late twentieth century after huge changes took off in the business world. With the emergence of new market channels, production expansion and retailing concentration, firms had to modify or reorganise the PD operation to adapt to structural changes, reduce operational costs and take advantage of the improvement in infrastructure and transport (McKinnon 1989). Good PDS provide companies competitive advantages and enables them to differentiate themselves. If PD fails, customers' expectation is not met. Unsatisfied customers will probably switch suppliers and sales will be lost (Mentzer et al. 1989).

2.3.2 Physical Distribution Channels

McKinnon (1989 p.52) defines a physical distribution channel as follows:

A physical distribution (or logistical) channel is composed of terminal nodes, such as factories and shops, intermediate nodes, such as warehouses, and the links between them, represented by freight movements.

Figure 2.4 shows models of physical distribution channels in a vertical dimension. The most straightforward model is from manufacturers to retailers directly, which is called ‘direct channel’ (McKinnon 1989, Bowersox 1978). This channel enables goods to be transported to retailers at branch store level from factories without involving other nodes. As opposed to direct channel, ‘indirect channel’ or ‘echelon channel’ involves multiple nodes and stocks are held at one or more intermediate locations in the supply line. “A manufacturer using an echelon channel directs its output through distribution depots. The corresponding action for a multiple retailer is to direct incoming supplies through a warehouse under its control” (McKinnon 1989 p.53). Thus goods can be transported to retailers in the following ways:

- Manufacturer via manufacturer’s distribution depot to retail store;
- Manufacturer to wholesaler to retail store;
- Manufacturer via third-party distribution service to retail store;
- Manufacturer via distribution contractor and wholesaler to retail store;
- Manufacturer via retailer’s depots to retail store etc.

Figure 2.4 gives a few examples of the main alternative channels. The type of intermediaries and the number of levels of intermediaries can be very different from one company to another.

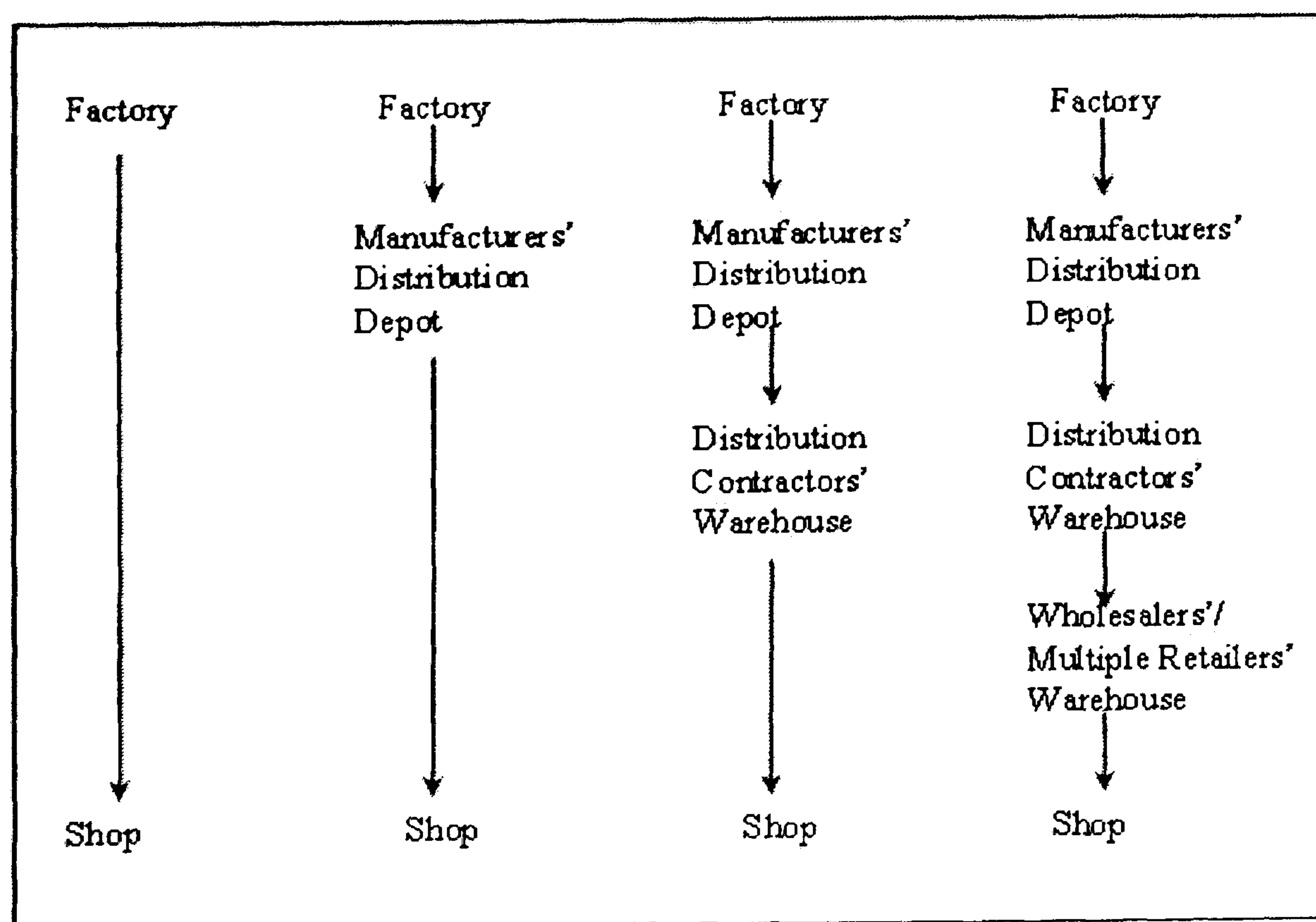


Figure 2.4: Physical Distribution Channels

(Adapted from McKinnon 1989)

Many firms combine the two models together, i.e. direct deliveries and distribution via intermediate stockholding points as firms may have many different products and clients. Such hybrid systems provide flexibility to serve different distribution needs (McKinnon 1989, Rushton et al. 2000).

As opposed to a distribution channel, a marketing channel is related to the transfer of the ownership of goods, thus is defined as “an organizational channel through which the ownership of goods flows from producer to final customer via one or more intermediaries” (McKinnon 1989 p.27). Marketing channels are important in clarifying ownership and responsibilities, which make use of intermediaries such as wholesalers to advertise, market and sell products.

2.3.3 Summary

This section set out the physical distribution definition, one of the most crucial concepts of this study. Physical distribution is part of logistics, and is concerned with finished products. Models of physical distribution channels in traditional business context were also discussed. Changes of physical distribution channels in the online context will be discussed in the subsequent chapters.

2.4 CUSTOMER SERVICE

2.4.1 Definition of Customer Service

Customer service creates awareness of the product and facilitates possession utility, a value added to a product by allowing the customer to take ownership of the item (Emerson and Grimm 1996, Stock and Lambert 2001). Recognition of the importance of customer service began growing in the late sixties (Stephenson and Willet 1968, Hutchinson and Stolle 1968). LaLonde and Zinszer defined customer service as “those activities that occur at the interface between the customer and the corporation which enhance or facilitate the sale and use of the corporation’s products or services” (1976 p.2). Their work has been considered as one of the most exhaustive and influential studies of customer service.

In the highly competitive environment, good customer service can serve as a differentiation to provide firms with competitive advantages. The attempt to differentiate products alone may not be sufficient to satisfy the increasingly sophisticated customers (Bookbinder and Lynch 1997). Customers expect the whole comprehensive package and only a happy customer can be retained and repurchase, thus creating profits and leading to increased market share for firms (Innis and LaLonde 1994).

According to Grant et al. (2006 p.36), customer service is defined as:

“A process which takes place between the buyer, seller, and third party. The process results in a value added to the product or service exchanged. This value added in the exchange process might be short term as in a single transaction or longer term as in a contractual relationship. The value added is also shared, in that each of the parties to the transaction or contract are better off at the completion of the transaction than it was before the transaction took place. Thus, in a process view: Customer service is a process for providing significant value-added benefits to the supply chain in a cost-effective way.”

The key to investigating customer service is understanding the customer perspective, as what really matters is how customers evaluate the supplier's performance rather than what the supplier does (Tucker 1980, Emerson and Grimm 1996). Rakowski (1982) identified three approaches to organising the area of customer service and these approaches were based on 1) time phasing, 2) operational attributes, and 3) functional areas. LaLonde and Zinszer (1976) divided service activities into the following sequence in time: pre-transaction, transaction and post-transaction. Pre-transaction elements arise prior to the actual transaction taking place and may include description of company structure, system or policy etc. Transaction elements are directly related to the physical transaction such as order availability, delivery and condition etc. These are most commonly concerned with logistics. Post-transaction elements occur after the transaction including after sales service, returns and claims etc. (Rushton et al. 2000). Figure 2.5 depicts this concept (Grant et al. 2006).

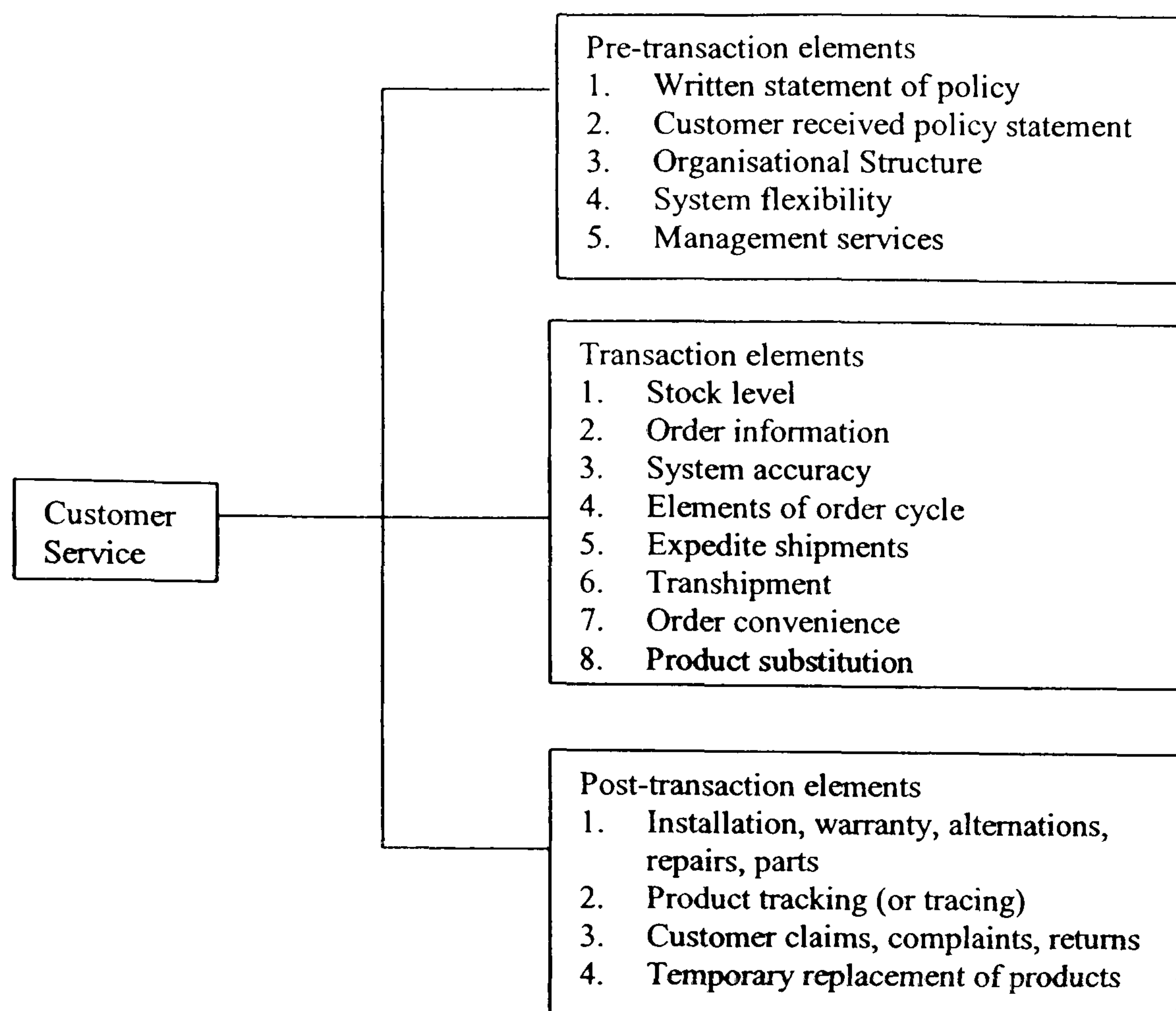


Figure 2.5: Elements of Customer Service

(Source: Grant et al. 2006 p.37)

Rakowski (1982) also examined the customer service concept according to operational attributes, which may include convenience, flexibility, personalised attention, information, speed, availability, accuracy and consistency etc. The third approach he used towards customer service was based on functional areas such as sales, communications, physical distribution and product support.

2.4.2 Customer Service in Logistics

Customer service, the interface between marketing and logistics, measures how logistics systems function in providing time and place utility. There is no value in a product unless it is available in the hands of customers (Grant et al. 2006, Christopher 1998). How well the marketing and logistical functions communicate and interact with each other impacts on the services that firms deliver to their customers. Improved communication and coordination between marketing and logistics would improve the overall performance of a firm, thus enabling the firm to achieve bigger market share and better profitability (Innis and La Londe 1994). The traditional marketing mix contains

four Ps: product, price, promotion and place. Part of the value of a product is created by the ‘place’ element. A company’s marketing efforts rely on its ability to deliver the right amount of the right product at the right place at the right time in the right condition at the right price with the right information, i.e. the ‘Seven Rs’ (Coyle et al. 1992).

Kumar and Sharman (1992) considered distribution as an important element of customer service. It is widely recognised that physical distribution is a primary means through which to deliver customer value (Innis and LaLonde 1994). The significant role that physical distribution plays in satisfying customers can never be underestimated. Figure 2.6 shows the impact of physical distribution on sales.

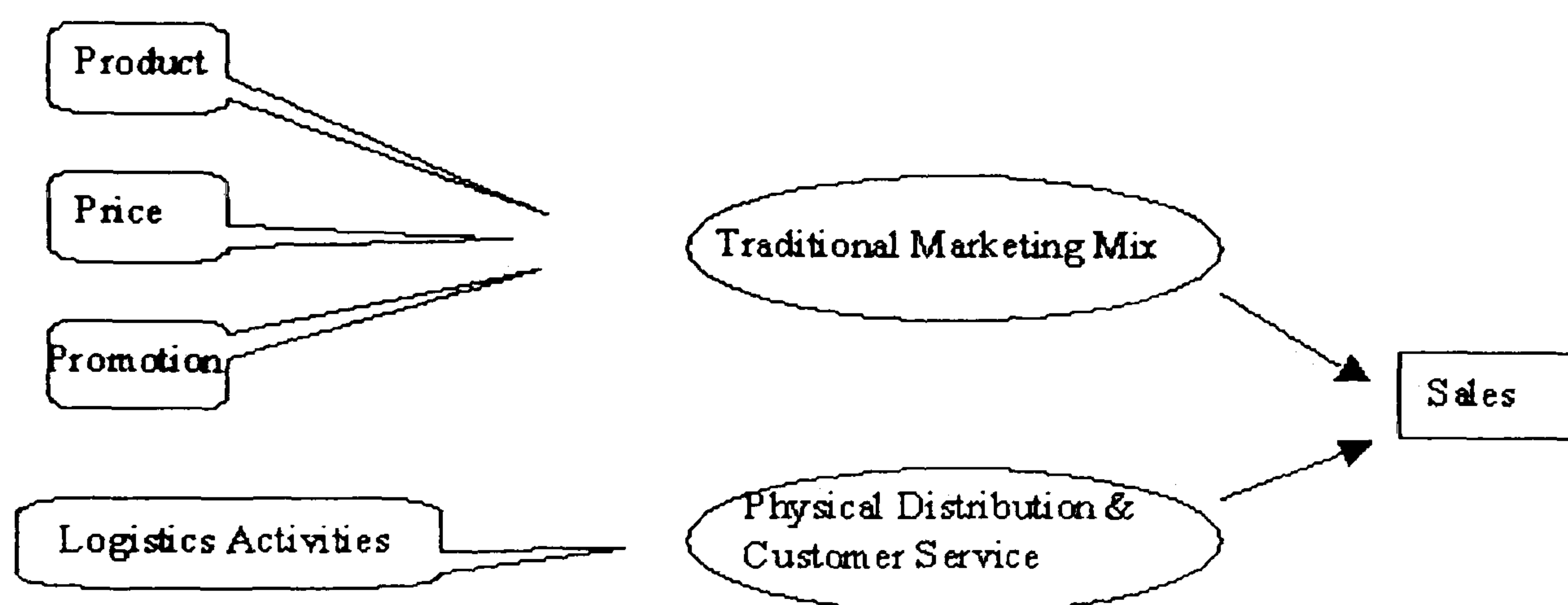


Figure 2.6: Impact of Physical Distribution on Demand

(Adapted from Innis and LaLonde 1994)

The challenge to marketing and strategic planning in any business is to “construct a corporate strategy that specifically builds upon logistics as a means of achieving competitive advantage through a much stronger focus on ... reliability, responsiveness and relationships” (Christopher 1999 p.35). It is increasingly recognised that logistics management can create unique types of customer value, which establishes competitive advantages. Logistics service is becoming regarded as an essential element of customer satisfaction in a growing number of product markets (Langley and Holcomb 1992). Bookbinder and Lynch (1997) examined customer service in logistics from the point of view of outbound shipment, i.e. physical distribution. And they concentrated on lead time and fill rate as two focal customer service elements. Innis and LaLonde (1994) argued that the objectives of a company’s distribution activities are to determine the appropriate customer service levels, and manage the trade-off between minimising costs

and optimising service. A focus on customer service and physical distribution could enhance a firm's ability to retain current customers and recruit new customers. Maltz and Maltz (1998) looked at customer service as a multifaceted concept in the distribution channel which encompasses elements such as inventory availability, on-time delivery, order cycle time, and supplier's ability to respond to customer requests and changes in the new market. Daugherty, Stank and Ellinger (1998) suggested that in many cases, distribution service is deemed more important than product quality or price in establishing customer satisfaction. Figure 2.7 depicts that distribution service can be very effective in increasing customer satisfaction, loyalty and then positively affect financial indicators such as profitability and market share.

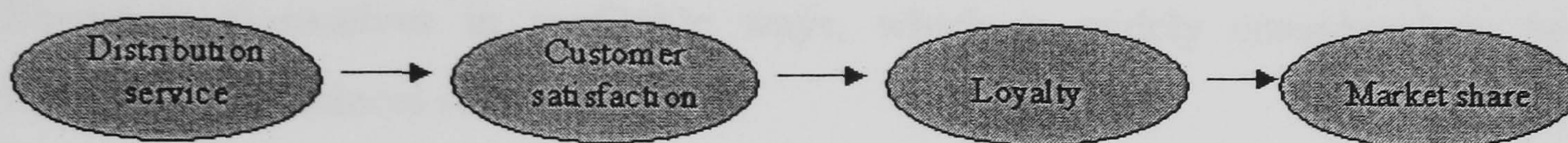


Figure 2.7: Distribution and Customer Service Conceptual Model

2.4.3 Summary

Customer service is one of the few terms that is “universally used, yet individually defined” (LaLonde and Zinszer 1976 p.259). Whether the customer is a company or end user, good service from suppliers always helps to generate satisfaction, loyalty and sales. Logistics service enhances customer satisfaction and improves company performance by providing time, place and form utilities of products. This section discussed the definition and importance of customer service as this thesis attempts to find out retailer's service quality from consumers' perspective. The next section will explore the definition and models of service quality.

2.5 SERVICE QUALITY

2.5.1 Concept of Service Quality

Service quality (SQ) has been an important research topic, also a much debated and controversial one (Brady and Cronin 2001). Clark (1922) defined service as a part of the

product or the thing that a purchaser is purchasing. Crosby (1979) defined quality as conformance to requirements that should be specified to measure quality efficiently. Service quality is then described as “a form of attitude, related but not equivalent to satisfaction, that results from the comparison of expectations with performance” (Cronin and Taylor 1992 p.56). As a result of economic and technological changes SQ has become a major concern for carriers and shippers alike in the transportation industry (Hopkins et al. 1993). Brady and Cronin (2001) argued that the foundation of service quality theory lies in the product quality and customer satisfaction literature. SQ is closely related to costs, profitability, customer satisfaction, customer retention and positive word of mouth (Buttle 1996). The delivery of high service quality strengthens corporate brands and contributes to consumer satisfaction. It also helps companies to differentiate themselves in profitable ways, which is widely considered to be a prerequisite for business success.

SQ has been explored in numerous academic publications. Its well documented characteristics include intangibility, heterogeneity and inseparability of production and consumption (Carman 1990). The next section introduces the measurement and conceptualisation of SQ.

2.5.2 Service Quality Models and the SERVQUAL Instrument

Most SQ conceptualisations are based on the expectation and perception gap paradigm, i.e. quality results from a comparison of perceived performance with expectations. The expectation and perception gap paradigm is also the basis of the well-known SERVQUAL model (Parasuraman, Zeithaml and Berry 1985, 1988).

Parasuraman, Zeithaml and Berry (PZB) made a substantial contribution to SQ by providing the service quality gap model (1985) and SERVQUAL instrument featuring 22 scales (1988). They defined SQ as the gap between a consumer’s expectations of service and perceptions of the service actually received. Consumer’s expectations were viewed as predictions about “what was likely to happen during an impending transaction or exchange” (PZB 1988 p.17), while perceived quality was viewed as “consumer’s judgment about an entity’s overall excellence or superiority” (PZB 1988

p.15). In their 1985 work, they identified ten components of SQ: reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding/knowing the customer and tangibles. They then put forward four gaps occurring in organizations that may cause SQ problems. These four gaps led to the expectation and perception gap. In 1988, PZB improved their framework by compressing the ten components into five dimensions: reliability, assurance, tangibles, empathy and responsiveness (See Figure 2.8). They further developed a 22-item instrument, i.e. SERVQUAL to measure consumer's expectations and perceptions. Their research was mainly based on the study of consumers in retailing and finance industries.

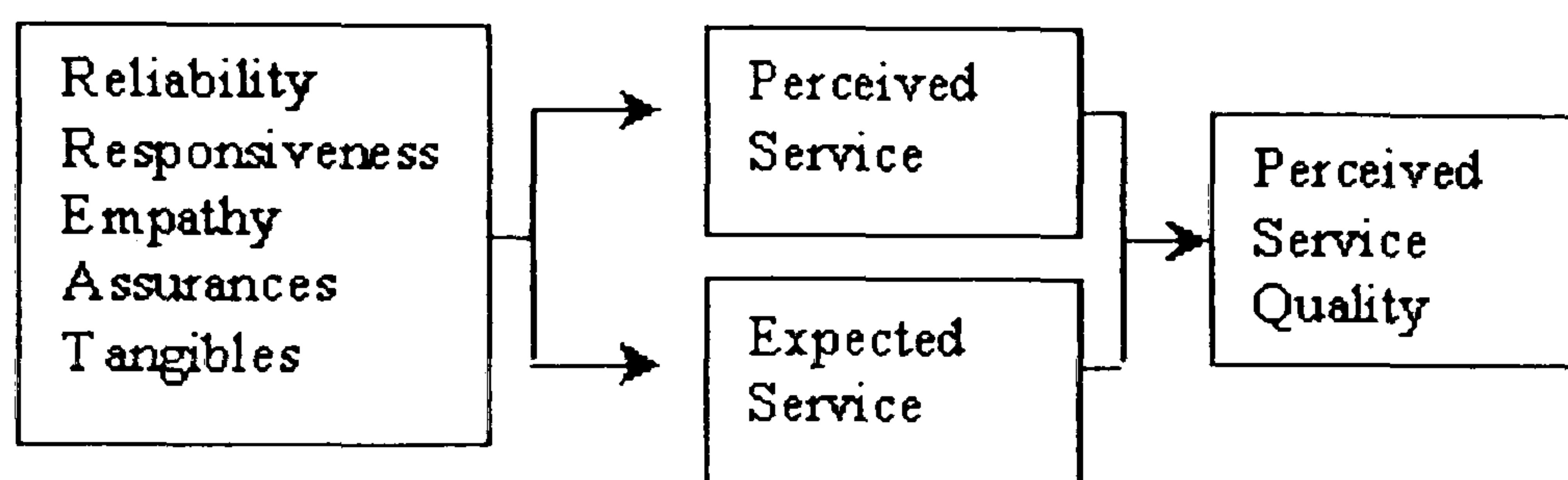


Figure 2.8: SERVQUAL Model

(Adapted from Parasuraman, Zeithaml and Berry 1988, Brady and Cronin 2001)

Other researchers replicated SERVQUAL type instruments in various service sectors and different types of services suggested different service dimensions (Bienstock et al. 1997). Brensinger and Lambert (1990) applied SERVQUAL to motor carrier transportation services in a B2B context but failed to find a very good predictive validity. These studies suggested that SERVQUAL's service quality dimensions may not be universally applicable across different types of services.

In spite of SERVQUAL's wide popularity, there have been some criticisms (Buttle 1996, Smith 1995). The biggest debate seems to centre on the foundation of SERVQUAL, the expectation-perception gap model. Cronin and Taylor (1992, 1994) questioned the accuracy of this paradigm and claimed that little theoretical or empirical evidence supported it. Alternatively, they proposed SERVPERF, simple performance-based measures of SQ. They suggested that performance alone determined satisfaction while effects of difference between expectation and perception tended to be insignificant. They also argued that practitioners would often measure SQ by having

customers assess the performance of the companies. They tested SERVPERF in banking, pest control, dry cleaning and fast food industries (1992). SERVPERF was composed of the 22 perception items in SERVQUAL but excluded expectation items. They reported positive analysis results in supporting their model.

Another major criticism of SERVQUAL is the inadequacy of the use of 'expectations'. Expectations are very subjective and vary from individual to individual. They may be unrealistically low or high, which has a big effect on the judgment of SQ. Iacobucci et al. (1994) suggested using the generic word 'standard' to replace 'expectations'. This standard could be an industrial standard, a consumer's ideal standard or a brand standard based on past experience. Further, perception measures alone could be used to assess the overall service quality (Smith 1995).

Other issues questioning the universal applicability of SERVQUAL across different types of industries have also been raised. A replication study of SERVQUAL by Carmon (1990) has proved that consumers are 'at least partly context specific in the dimensions they employ to evaluate SQ' (Buttle 1996 p.17). Moreover, critics have argued that SERVQUAL focuses the process of service delivery rather than the outcome of the service delivery (Cronin and Taylor 1992, Buttle 1996).

2.5.3 Summary

Service quality has been one of the mostly debated topics in management literature due to its elusive characteristics and strategic importance in relation to costs, profitability, customer satisfaction and retention. The SERVQUAL model measures SQ as the gap between consumer's expectations of service and perceptions of the service actually received. SERVQUAL has been applied in various retailing and service sectors but failed to generalise the dimensions for different kind of services, nor for goods industries. Thus consumers' perceptions of retailers' performance will be used in this thesis to evaluate the SQ although consumers' expectations will also be investigated. The detailed methodology will be discussed in Chapter 7 which explains the empirical consumer survey study.

2.6 PHYSICAL DISTRIBUTION SERVICE QUALITY

2.6.1 Logistics Service Quality

PDS is part of a broader logistics service (LS) concept, which also includes the marketing customer service element (Mentzer et al. 1989). Logistics represents a “comprehensive process” (Langley and Holcomb 1992 p.1), incorporating a broad range of activities, linking with other suprasystems and pertaining “directly to the requirements of the customer” (ibid p.6). Logistics is in a position to provide unique and meaningful opportunities to achieve good values to customers. Logistics creates customer value by providing time, place and form utility (Emerson and Grimm 1996, Mentzer et al. 1999) so that the product is at the right place, at the time the customer wants it and in an undamaged condition. Thus the main difference between LS and PDS is that LS is more customer-oriented while PDS is more operations-based (Mentzer et al. 1999). In other words, PDS is the operational part of LS which also composes marketing service dimensions. LS encompasses not only order delivery information, but also order placement and order processing information (Forslund 2004). The marketing customer service element involves activities that facilitate the possession utility and happen outside the context of the order cycle. For example, they may include product quality, service price, maintenance, salesperson attitude etc.

Mentzer et al. (1999) expanded the service quality domain into a logistics context by closely following the methodology of PZB (1985). They first identified a set of eight dimensions of LSQ by qualitative efforts. They then performed quantitative surveys to refine and empirically test the scale. As a result, a LSQ scale was developed constituting nine dimensions as follows:

- 1) Information quality
- 2) Ordering procedures
- 3) Ordering quantities
- 4) Timeliness
- 5) Order accuracy
- 6) Order quality
- 7) Order condition
- 8) Order error handling

9) Personnel contact quality

Mentzer et al. (2001) refined this scale by modelling the logistics process as the process perceived by customers and adding comparison analysis across market segments. The study suggested that different market segments place varying degrees of importance on each dimension of LSQ. The study also found that LSQ should be conceptualised as a process, where customer's perceptions of supplier's LSQ began to form from the moment of order placement. The perception continued to develop until order reception.

Franceschini and Rafele (2000) compared traditional logistics service indicators with the service dimensions defined in the PZB model (1985). Their logistics service indicators included lead time, order on-time rate, completeness, flexibility in delivering urgent order, correctness and damage rate. They suggested that the LS indicators did not include 'empathy' dimension and should be updated.

2.6.2 Physical Distribution Service Quality

According to Perreault and Russ (1974) and Mentzer et al. (1989), physical distribution service (PDS) is the interrelated package of activities provided by a supplier that creates utility of time and place and insures form utility. Form utility mainly refers to the quality of products and although it is primarily the responsibility of manufacturers, PD can enhance it by delivering the right quantity of products in the undamaged condition, or changing the shipment size and packaging characteristics (Bowersox 1969, Bienstock et al. 1997). Innis and La Londe (1994) did a customer service survey to retailing companies, investigating their views of suppliers. They found that physical distribution could provide key elements of customer service, which had a significant and positive impact on customer satisfaction, cognitive attitudes and repurchase intentions.

Bienstock et al. (1997 p.32) defined PDS as "involving the activities such as transportation, facility structure management (e.g., warehouse location), inventory management, and material handling (e.g., packaging, loading)". Mentzer et al. (1989) clarified the domain and elements of PDS in the customer service context. According to Mentzer et al. (1989 p.56), "Activities such as order processing, order assembly and

delivery are, in and of themselves, of no consequence to the buyers. However, the quality and timeliness of their performance is. The component indicators of PDS are, therefore, only those elements which measure how the product was supplied in terms of the customer's time, place and, indirectly, form utility.”

PDS activities focus on the individual order cycle, starting from order placement and ending with order delivery. It is recognised that although the importance of PDSQ elements varies across product type (Jackson et al. 1986), some elements such as consistency of delivery, availability and lead time stand out as being very important across most product types. Rakowski (1982) described PD as an important functional area of the customer service concept and the description of the elements is shown in Figure 2.9.

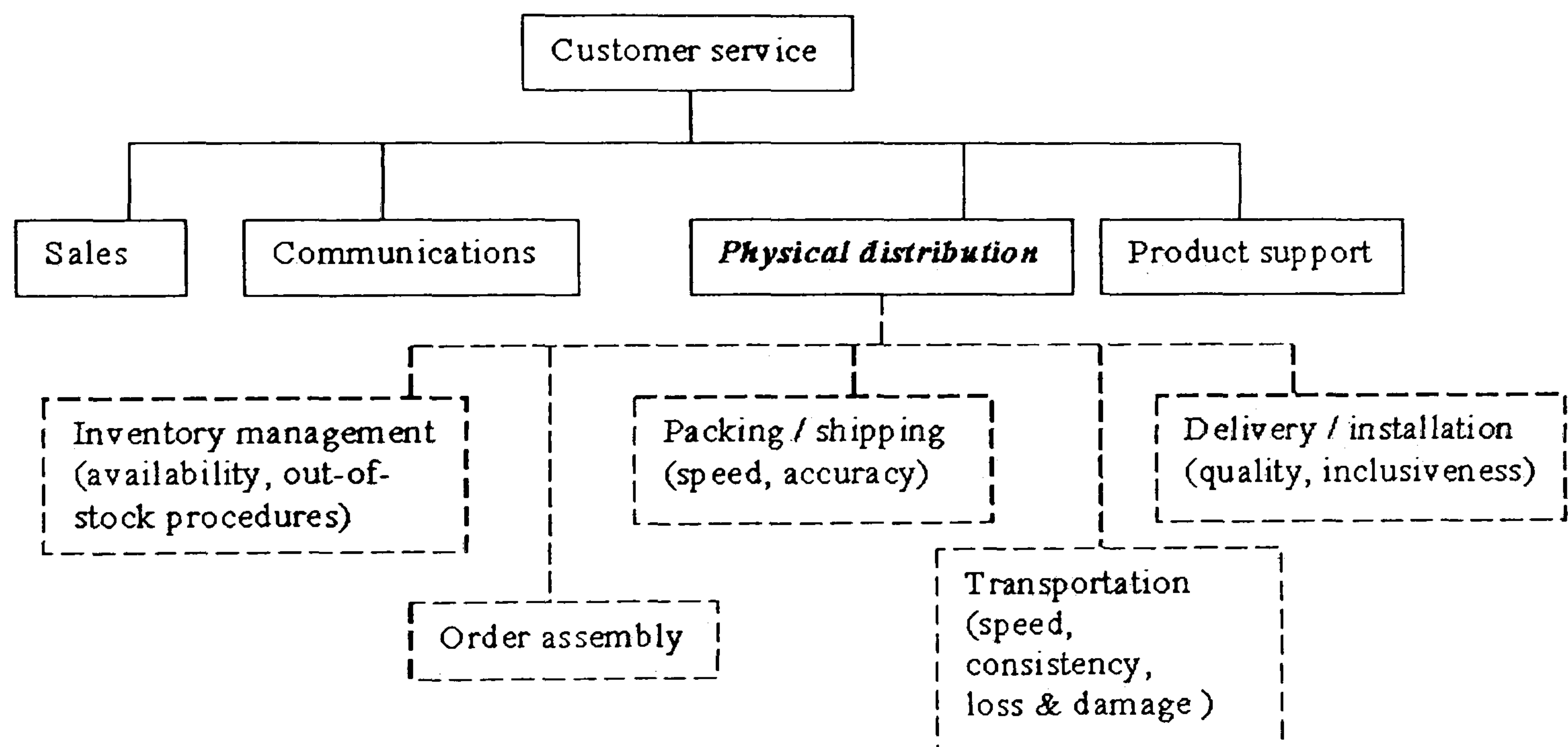


Figure 2.9: Physical Distribution-A Functional Area of Customer Service Typology

(Adapted from Rakowski 1982)

Based on the literature review, Mentzer et al. (1989) conceptualised a PDSQ construct that included three dimensions: availability of products, timeliness of delivery and quality of delivery. The definition of the dimensions is as follows:

Availability	Proportion of units, order lines or orders completely filled
Timeliness	Order cycle time performance, i.e. the time elapsed between placing an order and receiving an order
Quality	In-transit damage, shipment of incorrect items, and incorrect shipment quantity etc.

Table 2.2: Definitions of PDSQ dimensions

(Source Mentzer et al. 1989)

Emerson and Grimm (1996 p.31) made a slight refinement to Mentzer et al.'s framework by adding communication as a fourth dimension, which was defined as 'the accurate, timely transfer of appropriate information between supplier and customer'. They reckoned the importance of information, and order status information especially in improving service quality.

Bienstock et al. (1997) developed a construct for measuring industrial customers' perception of the PDSQ received from their suppliers based on empirical studies. They argued that the majority of service quality research was focused on end-users, or consumers of retail services so they wished to extend the domain of the service quality research to a business-to-business context. In the argument of the applicability of SERVQUAL to PDSQ research, Bienstock et al. identified the dramatic differences of PDS from most other service industries in terms of who received service and the nature of the interaction. In a PDS context, although the production and the consumption of products are inseparable (the products can not be consumed without being delivered and received), the service supplier and the customer are physically separated. The service delivery process hence becomes less of an issue, as the customer is more concerned with the outcome. PDS deals with products, rather than people. Contrary to other service industry sectors where the service is intangible, PDS is somewhat 'tangible', which can be demonstrated from the condition and reception time of the products that are being delivered. So it is necessary to employ outcome dimensions to measure PDSQ as SERVQUAL's functional or process dimensions may not be adequate.

Due to the above reasons, Bienstock et al. (1997) conceptualised PDSQ as a second-order construct composed of three first-order outcome dimensions, timeliness, availability and condition instead of replicating SERVQUAL's predominantly process dimensions. The construct was developed in a business-to-business context based on the interviews and surveys of purchasing managers of organisations. Condition was used to

replace the term 'quality' in Mentzer et al.'s 1989 work as 'quality' was referred to "the form and composition of the delivered order, that is, the condition of the products delivered" (Bienstock et al. 1997 p.32). There were fifteen items in three dimensions, with timeliness being identified as the most important dimension. The framework showed that "having the products ordered available and delivering the correct quantity of specified products undamaged and, most important, on time substantially influences purchasing managers' judgements of suppliers' PDSQ" (p.40).

In summary, most service quality research represented by PZB has been done in service industries that are very different from the physical distribution service industry. Mentzer et al (1989, 1999, 2001) and Bienstock et al. (1997) made a significant contribution by developing a PDSQ framework in an off-line business-to-business context. In the conventional retailing industry, the PDS does not involve the end user, as consumers carry the responsibility of delivering products to their homes from retail outlets. So there is very little literature of PDSQ concerned with business-to-consumer activities.

2.6.3 Summary

Physical distribution service is more operational based while logistics service is more customer based. Most PDSQ studies have been undertaken in a traditional B2B context. The important PDSQ dimensions discussed in the literature include availability, timeliness, quality and communication. This body of literature provides a basis for developing a PDSQ framework in the online context which will be discussed in the Chapter 5.

2.7 CONCLUSION

Logistics concepts have been evolving over the past one hundred years. First they appeared in the academic literature in the early twentieth century as 'physical distribution' (Kent and Flint 1997), the concept has been extended to supply chain management, involving the upstream and downstream partners. The logistics and distribution professionals have contributed a significant part of customer service

literature (Rakowski 1982), although customer service goes far beyond distribution function. Most service quality models are developed from and applied to service industries, rather than goods industries. Performance or consumers' perceptions based model is adopted in this thesis to investigate retailers' PDSQ, rather than the SERVQUAL model, which does not apply to goods industry. Mentzer et al. (1989, 1999 and 2001) produced a series of work on PDSQ in the traditional B2B context and made a significant contribution to the existing body of literature.

This chapter examined the concepts of logistics, supply chain management and customer service, providing an insight into the foundation of which this thesis is based upon. It also highlights the important PDSQ dimensions, which enables the development of a PDSQ framework in the online shopping environment. The next chapter discusses the concept of e-commerce and UK retailing sector's adoption of e-commerce.

CHAPTER THREE: DEVELOPMENT OF B2C E-COMMERCE

3.1 INTRODUCTION

During the past ten years, the Internet has created a retail and consumer revolution (IMRG 2006a). Consumers enjoy the speed, connectivity and convenience brought by the new technology. The Internet has become a popular and alternative channel for shopping. However, the development of e-commerce is not without its ups and downs. When the technology bubble burst in 2000, many dotcom companies folded. Yet recent years have seen a rapidly changing e-retail landscape. Online shopping is taking off and in 2005 online sales reached more than £19 billion in the UK and is estimated to reach £30 billion in 2006 (IMRG 2006a, 2006c).

Traditional retailers build the online channel to complement conventional stores, supplementing conventional stores with an Internet presence (Burt and Sparks 2003). Thus they are called multi-channel or 'bricks and clicks' retailers (Reynolds 2000). Pure players are companies that do not have an up-front store presence and sell products only via the Internet (Boyer 2001). The proliferation of pure players has intensified the competition in the online shopping market.

This chapter provides an understanding of how e-commerce has developed and been adopted by the UK retailing industry. Accordingly, it reviews the literature on e-commerce features and consumer characteristics. It also introduces the B2C e-commerce market by different retailing sectors.

3.2 E-COMMERCE

3.2.1 Definition of E-commerce

The information society is transforming the way people live, work and do business; it also changes the fundamental mechanisms of the economy. The Internet is one of the greatest technological inventions in the late twentieth century. It has grown at an

unprecedented rate and has become the corner stone of the global economy by challenging the established mindsets and bringing about creative innovations. Important as the Internet and technology are, they are not what electronic commerce (e-commerce) is all about. E-commerce is more than a set of technologies or business methods; it is about innovation (Wilsdon and Miller 2001) and “a view of business and of value creation which leads to revolutionary change” (Browne 2000 p.6). Though not even existing in 1994 (Mason 2003), e-commerce has grown considerably from the 1990s to date. We have come into a digital era where much business is being done via the electronic network (Reynolds 2000).

E-commerce is considered to be part of the broader category of electronic business, the founding application of which was electronic data interchange (EDI). E-business incorporates services that do not directly involve commercial transactions such as on-line customer support, account maintenance, provision of information resources etc. (Browne 2000). E-commerce is an activity concerned with the buying and selling of goods and services. It has four essential elements: ordering, invoicing, payment and order fulfilment (James and Hopkinson 2001). There are many ways to define e-commerce and the following definition introduced is from the UK government’s Cabinet Office (cited from McKinnon 2003) as McKinnon suggested that this definition captured the diversity of e-commerce (p.3).

“Electronic commerce is the exchange of information across electronic networks, at any stage in the supply chain, whether within an organization, between businesses, between businesses and consumers, or between the public and private sectors, whether paid or unpaid.”

Another definition of e-commerce noted the link between tangible goods and services (Department of Trade and Industry 2000, cited from Browne 2000 p.5).

“The purchase of goods, services or other financial transactions in which the interactive process is mediated by information or digital technology at both, locationally separate ends of the interchange.”

The above definitions tell us that the e-commerce typically includes business to business (B2B) trade, business to consumer (B2C) trade and consumer to consumer (C2C) trade. Figure 3.1 provides a good demonstration of the terminology.

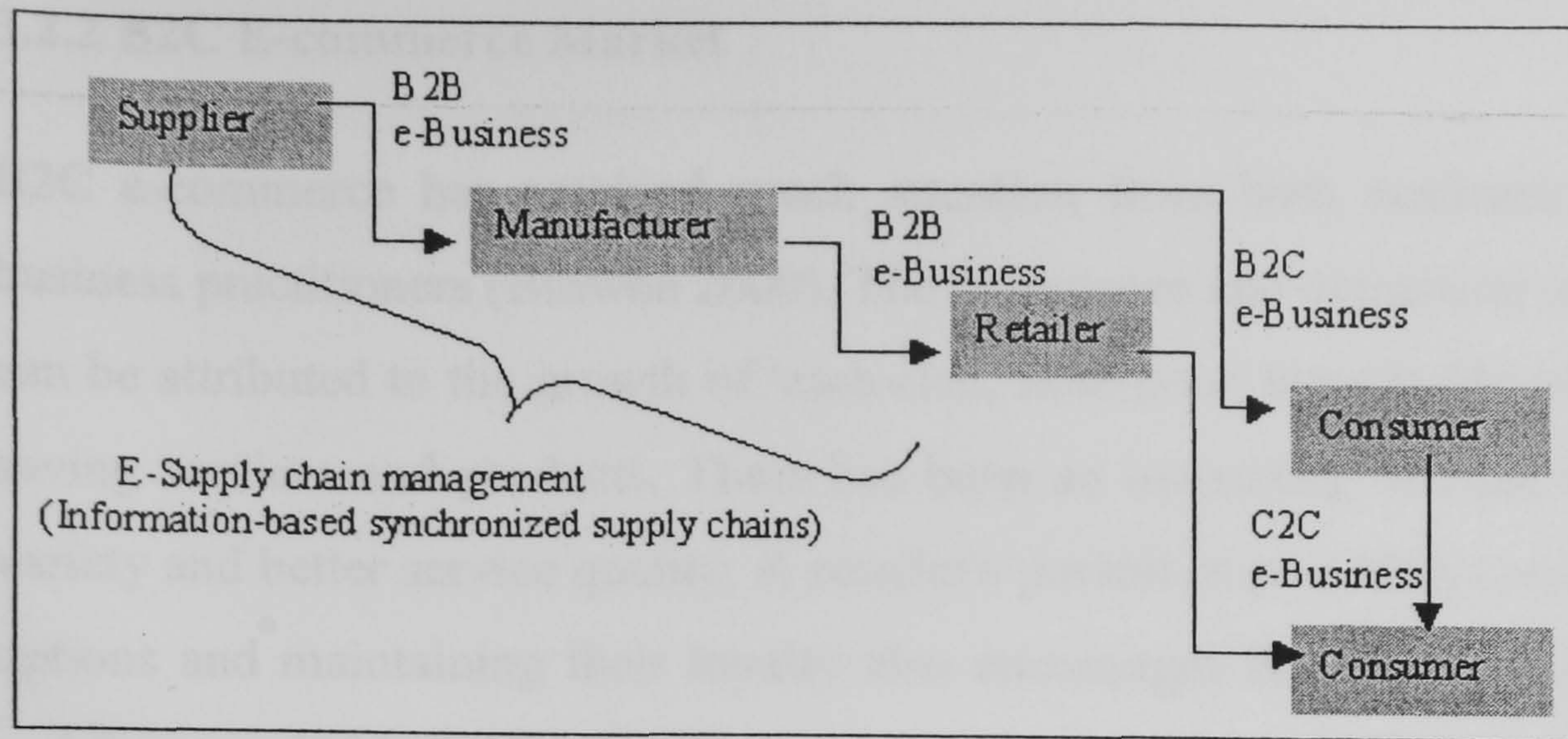


Figure 3.1: E-business Terminology

(Source: Harrison and Van Hoek 2002 p.260)

B2C e-commerce, the focus of this thesis, concentrates on the business to end-consumer view and is also termed as e-retailing (Burt and Sparks 2003). B2C sectors have received more publicity and research attention and developed quicker than B2B, but B2B e-commerce is much more significant than B2C in terms of value of transactions and producing real benefits to companies (Fernie and McKinnon 2003).

The main growth in B2B area comes from electronic marketplaces, which create new trading communities and link buyers and sellers together via the Internet (James and Hopkinson 2001). These marketplaces can either involve trading partners from different industries or from the same business sector, as well as logistics service provider companies (LSPs). These supply chain communities have a major impact on logistics and can yield substantial economic benefits (McKinnon 2003). Real-time information is exchanged and shared through the Internet that makes the market more competitive and more efficient. McKinnon (2003) also identified the possible effects of B2B on freight traffic, notably lower transport costs and improved vehicle utilisation.

C2C e-commerce makes every individual a potential buyer or seller in the electronic marketplace. C2C e-commerce has enjoyed spectacular growth since the launch of e-bay, one of the most popular websites worldwide. The following section introduces the market of B2C e-commerce.

3.2.2 B2C E-commerce Market

B2C e-commerce has received much attention from both academic researchers and business practitioners (Browne 2000). The emergence and expansion of online shopping can be attributed to the growth of 'cash-rich, time-poor' households who look for time-saving services and products. There has been an increasing demand for larger service variety and better service quality. A retailer's pursuit of providing consumers with more options and maintaining their loyalty also encourages B2C e-commerce growth (Shiu and Dawson 2004, Yrjölä 2003).

The importance of the development of e-commerce is fundamental. As Reynolds (2000 p.417) wrote in a critical review of e-commerce: "rarely has the retail and consumer services sector been faced with a strategic challenge of such significant complexity and uncertainty, which has grown in terms of that significance so rapidly". The advent of the Internet makes it possible for shopping to be no longer confined to physical stores. Shopping can happen with a simple click in front of the computer.

The growth of e-commerce is greatly facilitated by the advancement in technology. The technology for delivering e-commerce solutions has become more sophisticated and reliable (Fernie and McKinnon 2003). Computer prices have tumbled and the penetration of personal computers into households has increased. Internet service providers are offering cheap access. A report from the UK Office of Communication (2004) shows that 59% of UK homes have a PC and 50% of homes (around 12.5 million) have Internet access, including 3.2 million broadband connections. It is predicted that by 2010, access to the Internet in the UK will be universal (Burt and Sparks 2003).

Internet shopping opens up new opportunities for consumers and its benefits are becoming more recognised. It is a quick, convenient and inexpensive way to explore a large range of products. Although B2C e-commerce did not take off as significantly and sweepingly as predicted by some commentators (Mandeville 1995), it accounts for 10% of retail sales in the UK in 2006 (IMRG 2006c). Figure 3.2 shows the steady increase in online retailing sales from 2001 to 2006 in the UK.



Figure 3.2: Online Shopping Sales in the UK from 2001-2005

(Source: IMRG 2006a)

3.2.3 B2C E-commerce Consumers

“The prevailing socio-demographic changes in today’s consumer market, including the expanding number of dual-income and single-parent households and an increasing number of computer-literate consumers, have significantly altered consumers’ expectations and demands during the shopping experience.” (Kim 2002 p.595)

B2C E-commerce Consumer Classification

Early surveys in the UK showed that the stereotypical Internet user would be a young, educated and well-paid middle-class male with adequate knowledge of technology (Pavitt 1997, Eastlick and Lotz 1999). More recent surveys show that female and older people are increasing their involvement (Dennis et al. 2002). Angus (2000) suggested that more women than men would have access to the Internet. One survey noted that in 2004 British women spent more online than men (Anon 2004). Online consumers are considered to be more balanced in gender and age with average income (Ferne and McKinnon 2003). Data from Forrester (Omwando 2003) shows that 57% of the UK online users regularly shop online.

CACI (2002) classified online consumers in the UK into seven segmentations according to their online behaviours. ‘Wireless Wonders’ and ‘Virtual Virgins’ are less likely to buy online as they spend most of their time chatting and surfing. ‘Silver Surfer’ and ‘Dabblers’ have mixed feelings towards online shopping but they are not frequent

online shoppers. 'Generation E', 'Surfing Suits' and 'Wired 4 Live' groups are found to spend more time on the Internet and be more willing to make online purchase.

Given the significant growth in online shopping and the increased competitiveness of e-retailing market, e-retailers need to understand why consumers shop online and from a particular brand. Rohma and Swaminathan (2004) developed an online consumer typology based on consumers' motivations and the four types are labeled as convenience shopper, variety seeker, balanced buyer and store-oriented shopper. Convenience shoppers seek for convenience mostly. Variety shoppers are more motivated by multiple options in purchasing channels, product types and brands. Balanced buyers are moderately motivated by convenience and variety seeking. Store-oriented shoppers' online behaviours are influenced by physical store orientation such as social interaction and immediate possession of products. The following paragraphs introduce the main benefits and motivations that consumers shop online.

B2C E-commerce Consumer Motivation and Benefits

Convenience and prices are the most cited benefits (Jarvenpaa and Todd 1997). Online shopping is considered to be 'frictionless' (Brynjolfsson and Smith 2000) and provides convenience for individuals as well as busy families. Social structures are changing, as there are more families with single parent or both working parents. Online shopping is timesaving and improves a consumer's ability to manage time. Consumers can shop without having to leave the house and office. The Internet also provides rich information for consumers to search and compare.

Most products are sold at a discount online as there is no cost of operating a store. Prices on the Internet have been found to be 9-16% lower than prices in conventional outlets (Brynjolfsson and Smith 2000). There are websites such as kelkoo.co.uk and priceguideuk.com, from which the consumers can make quick comparisons of their interested products as well as prices among different retailers. Low price online was very important in attracting consumers in early days. However, with the emergence of many e-retailers, prices on web pages have become more and more similar (Bhatnagar and Ghose 2004). Aberdeen Group (2005) also argued that price is no longer a viable differentiator in online shopping market as it is getting increasingly transparent and

homogeneous. Consumers are moving on to other criteria to continue their evaluation process such as security of information and reliable delivery service.

Other benefits and motives include wider choice, entertainment and fun seeking, ease of home delivery and social escapism. (Breitenbach and Doren 1998, Korgaonkar and Wolin 1999, Demangeot and Broderick 2006). Some e-retailers sell special products that are hard to find in stores. Online shopping provides a different experience and attracts those who seek pleasure in a virtual world (Anon 2004).

B2C E-commerce Customer Service

A study conducted by Doherty et al. (1999) suggested that for conventional retailers, the market for Internet trade was affected by the retailer's current customers' propensity to shop online. Retailers who considered their existing customer base to be unsuited to online shopping could develop a website and present it to a generally unknown audience. Retailers with a customer base suitable for online shopping could exploit the opportunity and enhance their propositions further. A study found that multi-channel consumers in the US, those who shop in both conventional stores and virtual stores, spend on average 30% more than single-channel consumers (Forrester 2002). They are more valued by the retailers as they tend to be more brand-loyal and bring more profits.

White and Daniel (2002) suggested that customer service expectations rose considerably during the 1990s as retailers started to exploit customer service as a differentiation. Consumers' demand for high service levels continues and online retailing can improve service. Kim (2002) suggested that online customer service depends on how promptly and competently a retailer responds to consumer needs and requests throughout the shopping process. The Internet allows consumers to personalize and customize their experience. Butler and Peppard (1998, cited from White and Daniel 2004) warned that retailers' understanding of consumer online purchasing process is of ultimate importance before they can create effective services.

As business is moving online, e-retailers have developed e-CRM (customer relationship management) by using the Internet as a tool. Consumer awareness and receptiveness towards using the Internet is important (Doherty et al. 1999). Customer relationship management (CRM) is a "comprehensive business and marketing strategy that

integrates technology, process, and all business activities around the customer” (Feinberg and Kadam 2002 p.432). CRM is a key component for enterprises of today and has an impact on customer satisfaction and loyalty. Feinberg et al. (2002a) suggested that all the top retailers have websites with some CRM features and they are important in offering good communication and services to consumers. E-commerce CRM features include online purchasing, customization possibilities, purchase conditions, preview product and links to delivery information. Efficient CRM systems need to be responsive and dynamic to consumer requirements and be an integral part of the whole system (Ganesh 2004).

Day and Bens (2005 p.160) suggested that retailers should capitalize the Internet opportunity to improve customer service. “Overall the Internet was judged to offer opportunities to reduce customer service costs, while tightening customer relationships by encouraging dialogue, linking more parts of customer contact and enabling the personalization of communications.” They concluded that relationship leaders will leverage the Internet to stretch their lead in good customer service.

3.2.4 B2C E-commerce Features

Disintermediation

One of the most prominent features of B2C e-commerce is disintermediation, “the removal of intermediaries in the supply chain in favour of the producer marketing directly to the consumer” (Chadwick et al. 2002 p.72). Thanks to the increasing power of retailers over the past decades, the role of wholesalers and distributors is shrinking and the distribution channels for consumer goods have shortened. The Internet may further shorten the channel as some manufacturers deal with e-retailers without any intermediaries and some others sell directly to the consumer by excluding retailers (Ettorre 1996). Figure 3.3 shows this trend.

Disintermediation provides new ways of differentiation (Reynolds 2000) and challenges the traditional retailer’s dominant position in the retail market. But the threat to retailers will be minimal as many manufacturers lack the skills and the system infrastructure to sell directly to consumers (Doherty et al. 1999). Also retailers’ roles are important as

they add their own components to the products to create the experience and service purchased by the consumer (Dawson 2000). Dawson (2000) suggested that retailers now take more responsibility for ensuring consumer satisfaction as people have moved into a period of growing affluence, wider consumer choice and better technologies. The Internet brings a bigger variety of ways that goods can reach consumer market.

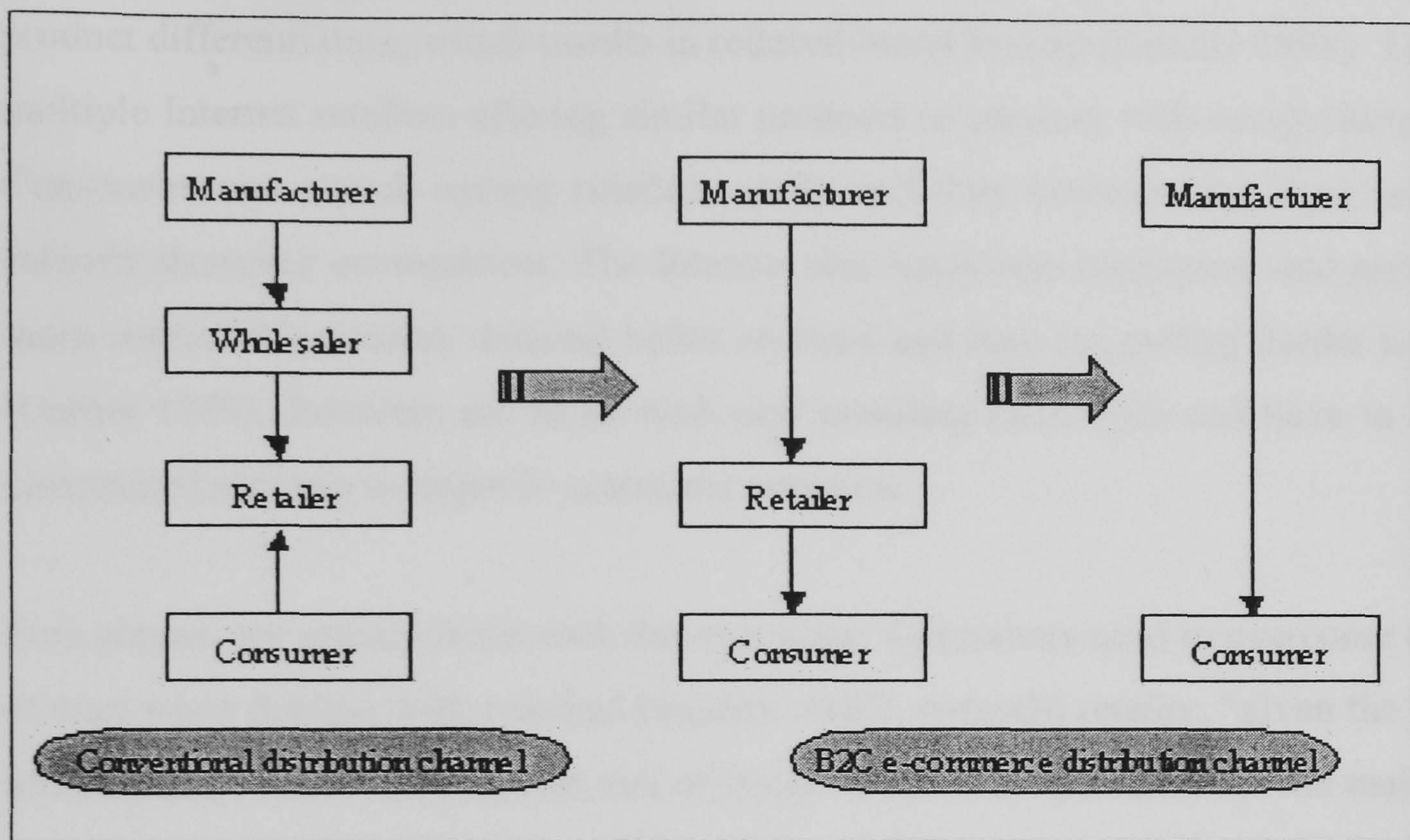


Figure 3.3: Disintermediation in the Transformation of Conventional Distribution Channel to B2C E-commerce Channel

New Relationships

E-commerce generates new types of relationships between retailers and consumers and brings about some changes in conventional shopping behaviour processes (Demangeot and Broderick 2006). The traditional relationships between the consumers and retailers are more task-based, and process and action oriented. The new relationships are more needs-based and interaction oriented (Garber 1999). The consumers have different needs and styles and retailers need to understand them. The retailers can tailor their services once they learn more about the consumers. The new relationships are more enriching and personalised. They are dependent on technology for mediation and customer service is implemented through instructional support (Kim 2002). Personalisation and mass customisation of product offerings can be achieved at very low marginal costs (Nicholls and Watson 2005). E-retailing brings more trading varieties, which result in other new relationships including notification,

recommendation, merchant brokering, negotiation and reputation mechanisms (Reynold 2000, Maes 1998). For multi-channel retailers, the Internet may play a big role in bringing the consumers even closer to retailers via a combined marketing channel (Doherty et al. 1999).

On the other hand, the Internet market leads to fierce price competition and dwindling product differentiation, which results in reduced brand loyalty (Kuttner 1998). There are multiple Internet retailers offering similar products or services with competitive prices. Consumers can switch among retailers easily and they become less loyal under the Internet shopping environment. The Internet also empowers consumers and gives them more control. Consumers demand better services and they are getting harder to satisfy (Garber 1999). Retailers are faced with new branding challenges and have to employ customised services to improve consumer retention.

Pure players are mainly faced with the trust issue. Consumers need to overcome the lack of trust when dealing with a virtual (unseen, unfelt, unsmelt) retailer, “given the relative unfamiliarity of the environment and of many of the start-up brands for the majority of the consumer base” (Reynolds 2000 p.424). Early pure players were normally had problems such as inadequate infrastructure, privacy and were vulnerable to financial crime and identity theft (Newman and Clarke 2003). Thus strong brand building is crucial in e-retailing for pure players. They need to deliver strong brand value to impress and convince consumers to buy from the virtual stores. An online consumer attitude survey (Ernst and Young 1999) showed that familiarity with an online retailer is very important for consumers to make purchasing decisions.

Marketing Activities

Shopping is getting more visible with the growth of the Internet and conventional shopping constraints being reduced. There are no opening hour limitations and the store catchment area is widened from local to global level. Consumer access issues are transformed from ‘mobility’ to ‘the ability to get online’ and ‘the ability to pay’ (Burt and Sparks 2003). The electronic marketplace is thus more effective in bringing in potential consumers. The problem of a ‘thin’ physical market resulted from dispersion of consumers over a wide geographical area is no longer an issue in e-commerce

(Varadarajan and Yadav 2002). Retailers can aggregate buyers by leveraging the potential of the Internet.

There are wider search options and a more exhaustive product selection (Enders and Jelassi 2000). Information search costs are significantly lowered, making it easier for consumers to make purchase decisions and promoting price competition among retailers (Bakos 2001).

The cost of acquiring consumers is significantly reduced and entry barriers to the retailing market are lowered due to the Internet. Retailers need to use new strategies to differentiate themselves and strengthen brand awareness. Consumer retention has become a big challenge. Due to intense competition e-retailers have to spend an excessive amount of expense to acquire new consumers. Customer acquisition cost is reported to represent a major marketing cost for e-retailers (Chen and Chang 2003).

Demand patterns may change as a result of online shopping (Tarn et al. 2003). The consumer base has more variety and consumer behaviour thus becomes more variable. Consumer demand may fluctuate more than under conventional shopping conditions which makes order fulfillment a big challenge for e-retailers.

Reynolds (2002) proposed a 'showroom effect' in the market which suggests that the online and offline marketing and buying activities are becoming interactive. One study found that some people looked for products online and then made their purchase in-store; while some others looked for products in-store first and then bought them from the Internet (NRF 2000). Thus high street stores have become showroom to some extent. In response to this trend, some pure players such as Boden and Figleave are also building showrooms to demonstrate their products. The convergence of the Internet and conventional retailing models is changing the way marketing is conducted.

Distribution of Products

Physical distribution of goods bought electronically results in the reorganization of the supply chain (Griffith and Palmer 1999). In the conventional self-service environment, retailers acquire goods from wholesalers or manufacturers, and then sell them to the consumers through physical point of purchase. Retail stores thus function as the end

point of the distribution chain. The efforts of product selection, picking and transporting are borne by the self-serving consumers. They have to take care of the ‘last mile’ delivery. E-retailing separates order selection from order fulfilment (Burt and Sparks 2003). Online shopping transfers the responsibility of delivery to the retailers so consumers become more dependent on retailers to fulfil delivery. That has a profound impact on the supply chain. The supply chain is reshaped and extended to the household (Grant et al. 2005). Products that would have been transported to retailers are delivered to consumers instead. Therefore, e-commerce involves a redistribution of costs rather than the simple creation of new costs (Browne 2000). Figure 3.4 compares the physical flow of goods between traditional and online retailing contexts.

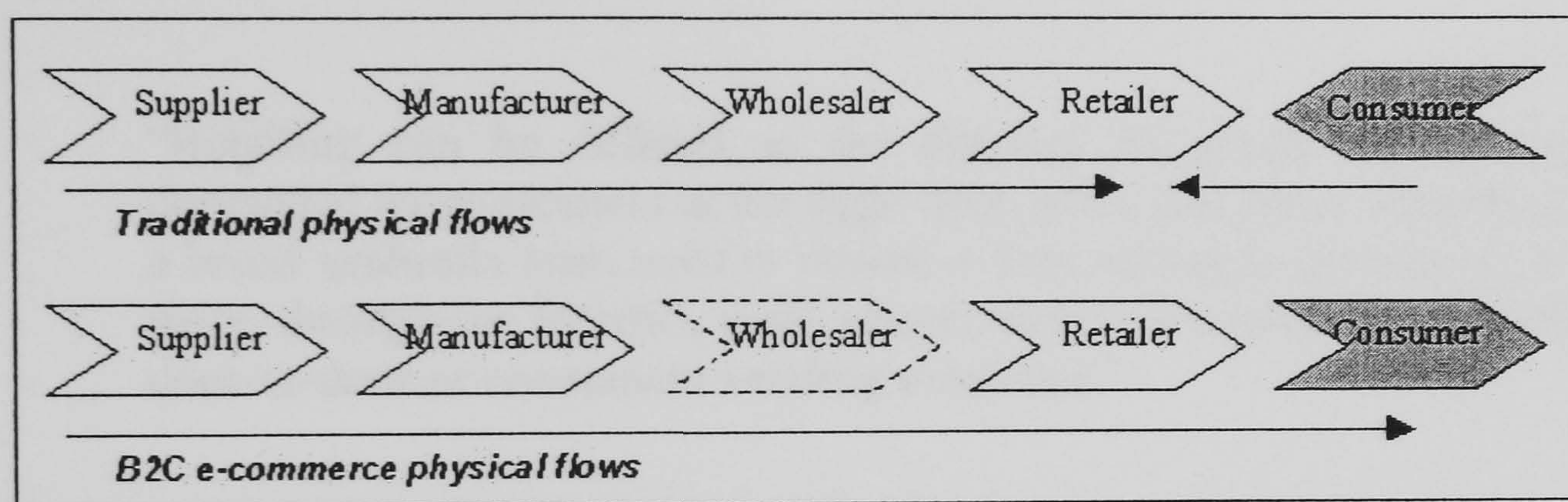


Figure 3.4: Comparison of Traditional Physical Flow and B2C E-commerce Physical Flow

Another feature is that existing delivery systems such as postal delivery may “have a new life” (Rushton et al. 2000 p.78). These systems normally have good national or local coverage and can turn into delivery companies for other product lines. The impact of Internet shopping on logistics and the distribution channel will be further discussed in Chapter Four.

3.2.5 Summary

This section described the concept of e-commerce in general, and B2C e-commerce in particular. E-retailing removes intermediaries in the supply chain and makes it more efficient; the distribution and inventory management operations are changed accordingly. The relationship between consumers and e-retailers becomes more personal and customized, although consumers’ loyalty to a certain brand is eroded to some extent. Retailers are faced with new and innovative ways to marketing and it is getting more

difficult to retain consumers. CRM is indispensable for retailers to provide satisfactory service to consumers who become more demanding and have far more choices in the e-era.

3.3 UK RETAILING SECTOR'S ADOPTION OF E-COMMERCE

3.3.1 Traditional Retailers' Adoption of E-commerce

The retailing industry has experienced numerous changes during the technological revolution. The following definition of retailing (Ganesh 2004 p.140) reflects the multi-channel orientation of the industry.

“Retailing can be defined as the delivery of goods and services demanded by consumers at the right time, price and place. Retailing is a broad umbrella term used to denote a firm selling to consumers in a store, through the Internet, mail, phone, television shopping networks, door-to-door or consumers vending machines.”

The term ‘channel’ describes the flow of a product from source to end-user (Doherty et al. 1999). Channel selection is a major decision for retailers and the Internet as a new interactive retail channel “involve bringing the customer even closer to the retailer via a combined marketing/distribution channel” (Doherty et al. 1999 p.23). Thus multi-channel retailers, who are also called 'bricks and clicks', are built on top of conventional stores, supplementing conventional stores with an Internet presence (Burt and Sparks 2003). Conventional retailers worked through several stages before they finally embraced the Internet (Katos 2000, Enders and Jelassi 2000).

The initial reaction towards the advent of the Internet was shock and denial. Reynolds (2000) suggested that conventional retailers had acquired organisational habits that were not well aligned to the needs of e-commerce. They tended to be rigid, inflexible and slow in decision-making. Many retailers conceived e-commerce as a passing fad rather than a lasting and expanding phenomenon. They came to acknowledge this new trend, but are still hesitant to enter the online world.

A small number of retailers made the first attempt towards online shopping to gain experience rather than to increase sales (Pivatt 1997). There was a prevailing concern that online selling may cannibalise sales in the physical stores. But retailers soon found that even if they stayed away from an online presence, conventional selling would still be cannibalised by other e-retailers (Enders and Jelassi 2000). Reynolds (2000 p.433) suggested: "When the two types of cultural environment are brought together, unexpected and perhaps dysfunctional behaviours may be expected to emerge." The Boston Consulting Group (1999) found four undesirable characteristics in conventional retailers when they tried to adapt e-commerce:

- Increased complexity resulted in inflexibility and slow decision-making processes.
- There were internal conflicts and stratification among different departments.
- Companies tended to resort to capital investment to solve problems.
- Coordination among divisions was limited which led to a weakened sense of market trends and dissatisfaction.

There have been several studies on retailer adoption of the Internet (Morganosky 1997, Doherty et al. 1997, Chadwick et al. 2002, Reynolds 2002, Burt and Sparks 2003, Nicholls and Watson 2005). Chadwick et al. (2002) conducted a four year longitudinal study of Internet adoption in the UK retail sector from 1997 to 2000. The sample included the UK's leading retailers in various sectors. Their findings suggested that many retailers began online activities with URL registration. By setting up a website, it is possible to convey product information, conduct marketing, send e-mails, etc. Then, retailers may develop the website into an electronic shop which mirrors their off-line activities. The level of Internet adoption in the late 1990s was low and by the end of 2000, only 26 per cent of those who had a website actually did online sales transaction. The study also found that larger retailers were more positive than smaller retailers in embracing e-commerce; the relationship between the number of outlets and the level of e-commerce adoption tended to be positive.

However, Internet adoption by traditional retailers in the UK is not uniform in penetration. KPMG (2001) made a distinction among retailers based on the level of online adoption: 'e-pioneers', 'e-followers' and 'e-laggards'. Although e-pioneers

outnumbered the other two groups, as many as 40 per cent of retailers seemed to be slow in adapting to the trend. Nicholls and Watson's survey (2005) reflected a changing attitude among e-retailers in that they are becoming more proactive in developing e-commerce strategy. The Internet is now considered to be an alternative sales channel and a communication tool to strengthen the brand further and attract more consumers. Their survey also showed that most retailers offer a much smaller range of goods online and they are still at the beginning of using the full potential of the Internet. The expertise retailers developed in managing the physical store is not considered relevant online, i.e. an Internet division does not 'play by the same rules' as traditional operations. Reynolds (2002) drew the conclusion that the effectiveness of brand recognition and established retail operational excellence work in combination.

When making the transformation to online, retailers can adopt a range of options from spin-offs to in-house division via strategic partnerships and joint ventures (Gulati and Garino 2000). A survey (Nicholls and Watson 2005) on the development of e-strategies by large UK retailers showed they used different strategies. The most common strategy was in-house development by the IT or marketing divisions; i.e., retailers choose to add the Internet to their existing marketing channel. Some retailers choose spin offs, making the Internet operation as independent and separate companies. A smaller number of retailers chose to develop partnerships or joint ventures. Acquisition was also mentioned, although very rare. The survey found that the majority of retailers managed the online business separately from the conventional channel and that there was a lack of contact between the two. Most retailers targeted the same consumer group and kept a consistent price system for both channels. Three groups of factors were found to impact on retailer Internet adoption: core strategic objectives, business characteristics and the internal resources and competencies (Nicholls and Watson 2005).

3.3.2 A Multi-channel Strategy

Some established retailers who have adopted a multi-channel strategy have become very successful. Inevitably, established retailers are in a better position and have more advantages. Moore (2000) argued that the most successful Internet adaptation models were those that retained an Internet culture parallel to the original operation. He also

pointed out that the trend for most companies was to converge towards an integrated model where companies overcame the initial mismatches in culture and outlook.

Nicholls and Watson (2005) argued that if the Internet is used effectively to target new customers or provide added value to existing ones, its cannibalising effects on other channels are mitigated. Porter (2001) suggested that the Internet would complement existing channels with its unique advantages. Kim (2002) noted that adding the Internet channel to the conventional retailing should increase access to products and awareness of products, which would enhance store buying activities. The perceived advantages in integrating traditional and online channels also include “cross-promotion, shared information, purchasing leverage, distribution economies” (Gulati and Garino 2000 p.107).

Min and Wolfinbarger (2005) suggested that multi-channel retailers have both producer- and customer-based advantages. Producer based advantages include prior customer base, good relationships with supplier, utilization of established distribution network and possession of extensive business knowledge. Customer-based advantage include well-developed brands during the years, trust built with consumers and consumer interests in the benefits of multiple shopping. Also lessons learned from the failure of some pure players give support to the ‘bricks-and-mortars’ in their transformation to ‘bricks-and-clicks’.

Apart from the above advantages, the online channel can have huge implications on the existing channel. A consumer survey in the US (Genex 2003) showed that some people would stop buying from a retailer if its online service was poor, even if the retailer was a familiar or favourite brand.

Multi-channel brings the flexibility to leverage the strength of each channel. Their cost of acquiring online customers is lower than that of pure players. Online shopping helps to expand the global market and create new markets through the range of services offered to consumers. Also, “UK retailers have built up an enviable reputation in retailing and supply chain management, providing the ideal framework in which to apply Internet channel” (Doherty et al. 1999 p.22). Verdict (2001) forecast that a

handful of multi-channel companies in each online sector would account for as much as 75 per cent of online sales.

The key lies in the integration between IT systems and established operations within the company. Ganesh (2004) advocated the multi-channel integration strategy which provides an integrated system handling multiple channels of operation of a retailer. The cross-channel coordination is one of the most effective ways for retailers to increase their consumers' spending. Berman and Thelen (2004) argued that multi-channel retailing offers synergies, resulting in increased customer base, revenue and market share. Also multi-channel model offers an important means of overcoming limitations associated with each channel.

3.3.3 UK Catalogue Mail Order and Direct Marketing

Prior to the rise of the Internet shopping, the main mechanism of home delivery was catalogue mail order and direct marketing. Catalogue retailing is "a hybrid of home shopping and the high street" (Competition Commission 2004 p.74). It is a relevant section as these companies have distribution infrastructure and supporting arms in place already to deliver to the home. Catalogue companies issue comprehensive catalogues offering a wide range of products on clothing and household products. Agency mail order companies normally offer different brands with free delivery and return which costs are built into the product price. Payment can be made over a long period. Direct catalogue companies sell goods branded under a single company name and charge for delivery. Payment must be made at the time of order (Browne et al 2001). Chen and Leteney (2000) explained the differences between traditional retailing and catalogue retailing model. In the catalogue mail model, a printed catalogue replaces the product display and information provision functions of a shop, while a mail or telephone call centre replaces the sales order-taking function.

In the 1970s and 1980s, catalogue sales increasingly received attention, owing to their phenomenal growth (Kim 1996). The period 1986 to 1992 non-store retailing including cataloguers further increased at 12% annually. The growth was especially significant for catalogue retailers who specialize in clothing and accessories, which is among the categories most frequently purchased.

Several factors contributed to the growth in the catalogue business during that period. As an alternative to store shopping, catalogue shopping satisfied consumer's demand for greater service and convenience. Consumers could also take the advantage of installment credit systems and did not have to pay at once. Women both staying at home or in the workforce became keen catalogue shoppers. In addition, technological advances such as specialized mailing lists and low-cost data processing via computerization led to more effective marketing (Kim 1996, Gordon 1994).

However, current trends indicate that the mail-order industry is entering the mature and decline phase of its life cycle ever since the 1990s (Klassen and Glynn 1992). Agency catalogue business has been experiencing rapid decline but direct catalogues such as Next and Marks and Spencer have been growing moderately (Browne 2001). Sales declining reasons given include: the emergence of new home shopping channels such as TV and the Internet; the emergence of discount retailers such as ASDA; increased use of credit card; changes in shopping habits and new developments in retailing. It has been suggested that the decline of catalogue is not the result of any decline in demand, but rather the decline of a business model, eroded by new business models (Competition Commission 2004). Figure 3.5 (Verdict 2004 p.12) shows the percentage share of home delivery by market components from 1998 to 2003, which depicts the declining market shares of traditional retailing and catalogue retailing but the increasing shares of e-retailers.

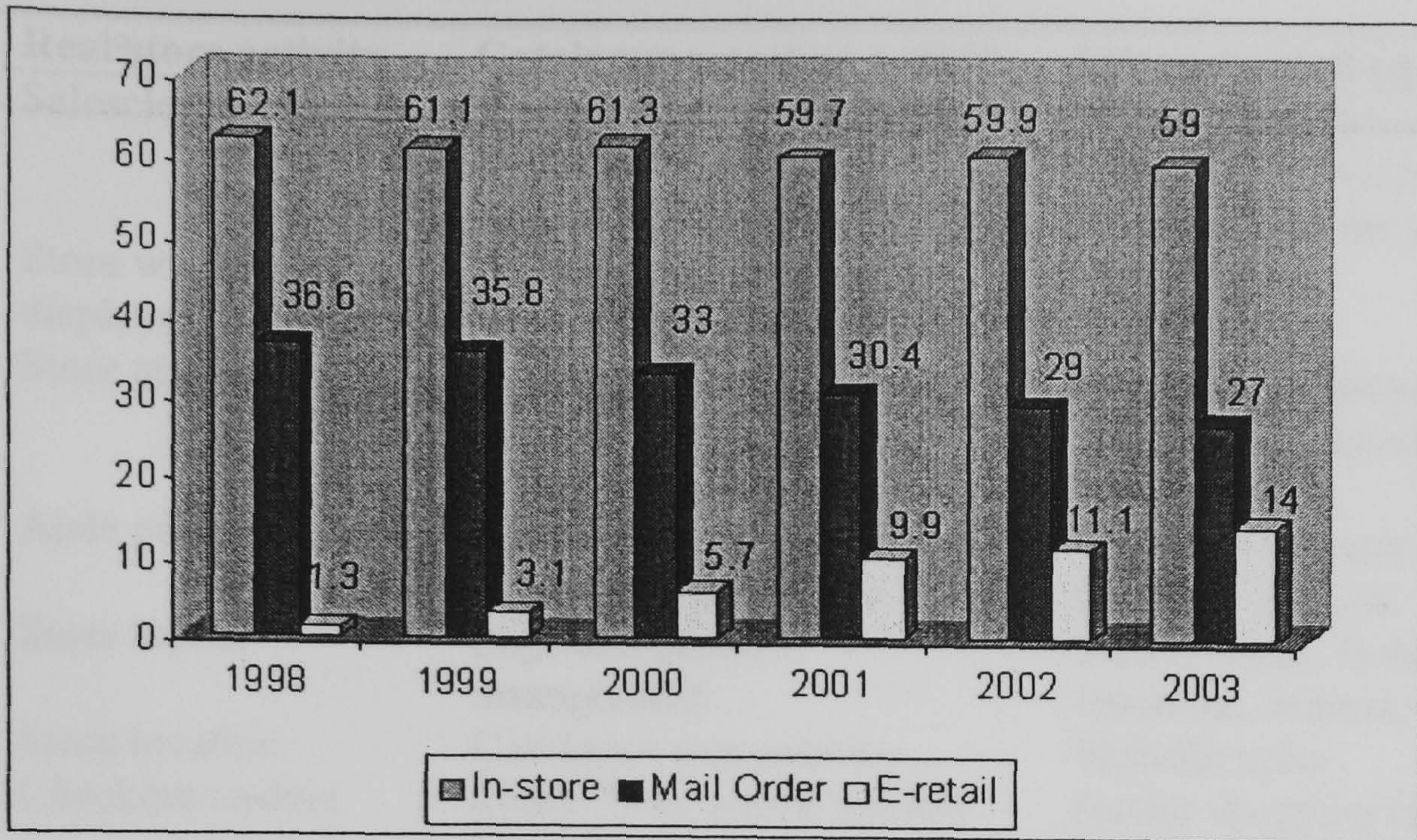


Figure 3.5: Percentage Share of Home Delivery by Market Components 1998-2003

(Source: Verdict 2004 p.12)

Demand for household goods continues to grow, and home shopping is an attractive option for many purchasers. Those goods and services are now available in a much greater variety of unbundled options and catalogue companies have many more competitors in the twenty-first century. This trend, accordingly, has created a more competitive retail environment in which catalogue companies have to make changes and differentiate themselves.

In contrast to traditional retailers' hesitation in adopting the adoption of online channel, catalogue retailers are perceived as direct predecessors of the e-retail business model (Van Vliet and Pota 2001) and many catalogue companies are eager to enter the e-market. They already have the basic infrastructure and skills needed to quickly establish online channels. They have systems in place for order taking, processing and shipping directly to consumers. No substantial adjustment of their organizational and operational processes is needed. Online channels also provide catalogue companies with economies of scale on top of their catalogue channel.

Although the Internet retail model is very different from the conventional retail and catalogue models in structure, they do have some elements in common. There are similar shopping functions, which are implemented through different terms. Table 3.1 summarises the conventional store, catalogue and Internet retail activities.

Real store activity	Catalogue retailing activity	Internet retail equivalent
Salesclerk service	Product descriptions, sales clerk on the phone, information pages	Product descriptions, information pages, gift services, search function, sales clerk on the phone/email
Store window displays	Front and back cover	Home page
Store atmosphere	Copy quality, graphics, product arrangement, perceived image	Interface consistency, store organisation, interface and graphics quality
Aisle products	Products on first 2-4 spreads and the middle spread	Featured products on hierarchical levels of the store
Store layout	Page and product arrangement	Screen depth, browse and search functions, indices, image maps
Store location	Catalogue organisation	Website links
Checkout cashier	Order form, phone number	Online shopping basket and/or order form
Look and touch of the merchandise	Limited to image quality and description	Limited to image quality and description, potential for sounds and video applications

Table 3.1: Retail Store Activities and Internet Retail Equivalents

(Adopted from Kim 1996, Lohse and Spiller 1999, Chen and Leteney 2000)

In the Internet model, consumers normally start by using the search engine to find e-retailers' websites first, then compare different offers. When they choose an e-retailer and place an order, the order is processed and goods are despatched directly from e-retailer's RDC or the manufacturers. Figure 3.6 demonstrates the online shopping process.

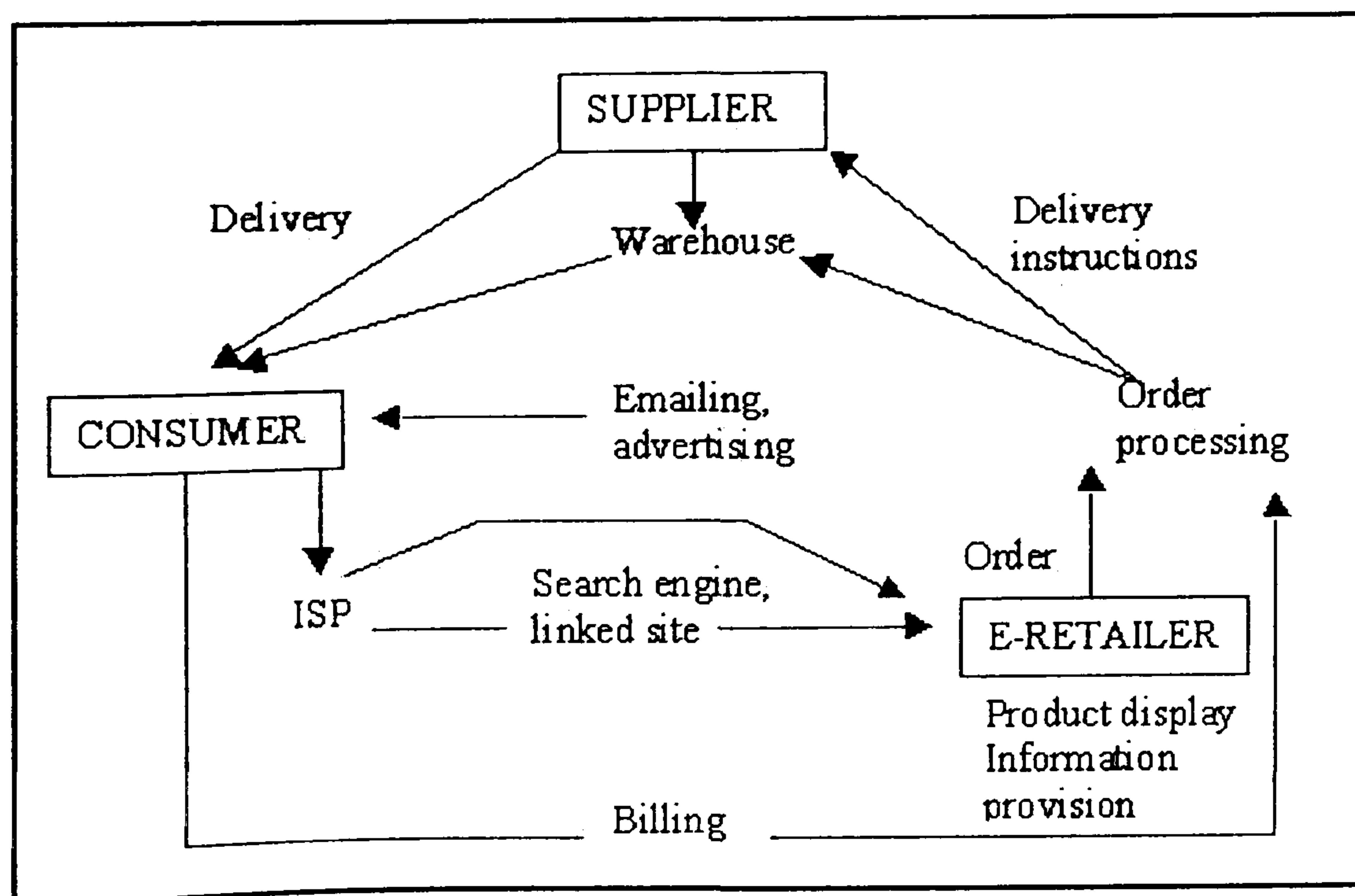


Figure 3.6: Internet Retail Model

(Adopted from Chen and Leteney 2000)

Different critical success factors for both traditional retail and the Internet retail models have been identified (Conant et al. 1993, Chen and Leteney 2000) and summarized in Table 3.2.

Traditional Retail Model	Internet Retail Model
<ul style="list-style-type: none"> • convenient store location • store atmosphere • store layout and merchandise presentation • knowledgeable, helpful salesperson • high inventory levels • wide product range 	<ul style="list-style-type: none"> • easy access to information • communication – personalise service • simple and secure transaction • supply – win confidence of suppliers • timely and accurate home delivery

Table 3.2: Comparison of Critical Success Factors of Traditional and Internet Retail Model

(Adopted from Chen and Leteney 2000)

3.3.4 Pure Internet Players

Pure players are companies that do not have an up-front store presence and sell products only via the Internet (Boyer 2001). The Internet time started to prosper during late 1990's and a large number of pure players sprang up. Companies such as Amazon and eToys grew at an exponential rate both in consumer numbers and sales. The later part of 1999 witnessed unrealistic and substantial expectations about the growth of e-commerce. The stock value of pure players soared. In contrast, conventional retailers were not very enthusiastic about embracing the new format of doing business during that period. With lower property and stock-keeping costs, pure players were predicted to be able to wipe out many existing retailers (Chen and Leteney 2000). The 'dotcom' euphoria did not last very long and various capital and operational problems started to occur. The e-commerce sector fell out of favour amid scepticism. Many pure players were unable to raise enough cash to fund the business and the shakeout period soon came at the end of 2000. As a result, a significant number of pure players went into trouble, if not bankruptcy, such as Boo.com, Webvan.com etc.

People started to question the viability of a pure Internet based model. Yet the shakeout has not only provided precious lessons for later entrants, but also strengthened positions for leadership companies (Ring and Tigert 2001, Macaluso 2000). The online market now has not only recovered, but is also growing rapidly, although at a rate slower than

authors had predicted. Table 3.3 shows the performance of some global pure players in Christmas 2001. The company which published the following data stopped further research so the following was the most recent available data.

	Domain Name	% Reach	Conversion rate
1	amazon.co.uk	19.77%	21.03%
2	amazon.com	12.50%	6.04%
3	bol.com	4.62%	5.72%
4	jungle.com	4.41%	14.52%
5	lastminute.com	3.63%	4.98%
6	cd-wow.com	3.32%	ns
7	britannia-music.co.uk	3.20%	34.55%
8	adobe.com	2.90%	3.53%

Table 3.3: Performance of Some Pure Players in Christmas 2001

Note: Reach = percentage of online population that have visited site during month

Conversion rate = percentage of visitors that have purchased from site

Ns= not significant

Based on 2000 interviews

(Source: NetValue 2002)

Compared with their multi-channel rivals, pure players have the following features (Cronin 1996, Reynolds 2000, Doherty et al. 1999, Van Vliet and Pota 2001):

- The absence of a physical infrastructure, resulting in reduced costs
- Highly scalable
- More flexibility in stock availability
- Exhaustive product range and unlimited opening hours
- Attracting new customers via a new global marketplace
- Require different management skills, mentality and competency from traditional retailing
- More successful in turning visitors into buyers as no real-world alternative is offered

Although pure players have many advantages, they are also faced with some weaknesses. They have to spend considerable capital in marketing their brands and products as they are new entries and do not enjoy established brand recognition or a large customer base. It is not easy to convince customers to buy from a website and it is even more difficult to win 'returning customers'. Few customers return to a website and

make another purchase if they feel their expectations were not met. Delivery is one of the biggest challenges pure players have to conquer. Pure players do not have face-to-face contact with customers so the handling of delivery and returns is critical.

Cornet et al. (2000) suggested that most pure players in Europe entered the market later than their American peers and thus had the benefits of learning from what had succeeded and failed in the US. They also had the advantage of applying the latest advanced technology.

Some authors also think that pure players will not replace bricks and mortar (Underhill 2000, Dennis et al. 2002). The Internet brings to retail a more integrating and effective way to market and distribute products. But the leisure and sociable element of going to a high street shopping centre can not be easily replaced by Internet shopping.

3.3.5 B2C E-commerce Market by Sectors

The valuations of the Internet consumer market are rising and some companies are making real profits. Surveys in the Economist (2004) and IMRG (2005, 2006) pointed out that e-commerce is already very big, and it is going to get much bigger. The market includes service sector and goods sector. Travel, entertainment, and financial services compose the majority of service sector. Travel is reported to make up the biggest chunk of B2C e-commerce and account for about one-third of online consumer spending (Economist 2004). Entertainment mainly consists of downloading the music and renting the DVD etc. Service retailing sectors such as banking and insurance are expected to benefit substantially from online exposure. The majority of the service sectors do not involve physical distribution of the goods thus are excluded from this research.

The goods sector includes both food and non-food goods, and this thesis focuses on non-food sectors only. Literature shows that e-commerce adoption of UK retailing industry is not only affected by the size of retailer and the competitive pressure, but also closely linked to the basic product characteristics such as product category, size, weight, and fashionability. Copeland (1923) classified consumer goods into convenience goods, shopping goods and specialty goods. Convenience goods are frequently purchased low

cost items. Shopping goods are acquired by consumers who make a considerable effort to evaluate and make comparisons. Specialty goods are desired brands, seldom purchased and expensive items with little substitution, normally requiring consumers to make a significant effort. These characteristics of products can be summarised into two natures related to the uptake of e-commerce: standardization (homogeneity versus heterogeneity); and tactility (low touch and feel factor versus high touch and feel factor) (Rosen and Howard 2000).

Rosen and Howard (2000) analysed the retail goods category and made a general division between the standardized (homogeneous) goods and the differentiated (heterogeneous) goods in terms of potential electronic retail influence. They categorized media products, such as books, music and video; electronic products, such as computer; and gifts, such as toys and games, into homogeneous goods. Homogeneous goods are also called commodity goods, and are considered to be most adaptable to a virtual sales format. For most commodity goods, the touch and feel factor is not important. It means that it is not crucial for the consumers to actually touch, feel and try out the products before purchase is made. Other features of commodity goods included (Rosen and Howard 2000) large logistics hurdles, higher financial risk and profit questionable, and a large number of competitors in a price sensitive market.

In contrast to commodity goods, heterogeneous products were identified as more differentiated, higher-priced and heavier (Rosen and Howard 2000), including luxury items, apparel, expensive electronic products, household appliances and groceries. Heterogeneous goods were considered to be less suitable to online sales. They required higher touch and feel factor and presented bigger logistics challenges.

Although the research done by Chadwick et al. (2002) shows that the extent of Internet adoption varies from sector to sector and from retailer to retailer, the result is in line with the fact that low-touch commodity goods had more online presence than heterogeneous and high-touch items. Generally speaking, books and CDs, alcohol and toys had higher level of adaptations (see Table 3.4) than grocery and clothes. Stern (1999) also did similar research and found that entertainment and electronic sectors including computers, books, music, office products and toys were the most impacted. Sports,

clothing and home furnishings were considered to be moderately impacted sectors, while do-it-yourself (DIY) and furniture were the least affected.

Retail sector	Registered site	Interactive sales service	Percentage of retailers using online selling service / registered
Electrical	28	11	0.39
Toys	28	13	0.46
DIY	15	4	0.27
Home shopping	85	36	0.42
Sports	29	9	0.31
Alcohol retailers	15	7	0.47
Books and music	48	22	0.46
Clothing	95	19	0.20
Furnishings	17	9	0.53
Jewelry	19	4	0.21
Mixed stores	64	17	0.27
Footwear	35	2	0.06
Health and beauty	42	7	0.17
Specialty foods	41	5	0.12
Total	668	172	0.26

Table 3.4: The Relationship between Retail Sector and Internet Adoption

(Source: Chadwick, Doherty and Hart 2002)

The above research was conducted in the late 1990s. Considering how rapidly e-commerce has been developing, it is now almost impossible to find a retail sector without the Internet presence. As technology has improved significantly, the constraints of selling from the Internet are shrinking and even the heterogeneous goods sectors previously thought not suitable for Internet shopping are enjoying widespread sales (Kim 2002). Many retailers provide very detailed information on the site, such as the size, dimension, weight, colour and material etc. The comprehensiveness of product information serves to make up the 'touch and feel' constraints. The determinant factors are getting less important. Nowadays people are buying almost everything online.

Verdict (2004) produced a market report regarding to the home delivery market. Figure 3.7 shows the top five categories by frequency of delivery in 2003. The frequency was represented by numbers, i.e. the average points scores per consumer in each product area generated by grading responses. Books and videos, healthy and beauty had the highest delivery frequency, followed by clothing and DIY products.

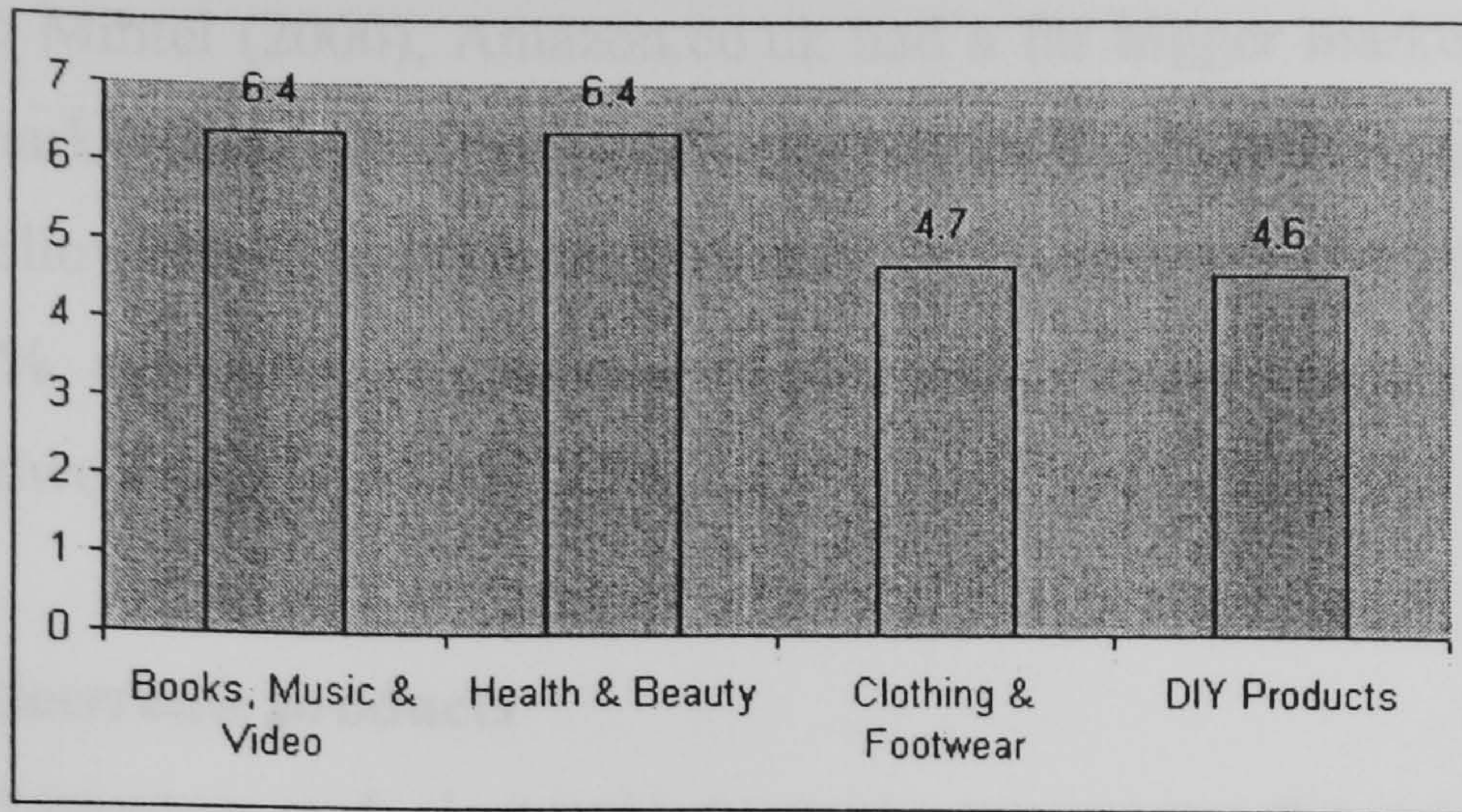


Figure 3.7: Top Five Categories by Frequency

Once a week or more – 60 points; Less than once a week but at least once a month – 18 points; Every 2-3 months - 5 points; Every 6 months - 2 points; Once a year – 1 point; Less than once a year – 0.5 points

(Source: Verdict Home Delivery Report 2004 p.10)

The following examines the Internet adoption of major goods sectors in the UK and the predominant retailers active in online sales.

Books, CDs and Videos

Books, CDs and videos are very standard products to ship and deliver. There are many advantages to develop an e-format for book selling which include (Rosen and Howard 2000):

- low touch and feel factor
- high-margin business and price sensitive
- standard items, cheaper to deliver
- good gift items and ordering online convenient
- instant utility satisfaction is less important
- easy to package, distribute and deliver
- a larger range of products offered as virtual stores not constrained by the shelf space and distribution centre store far more inventories

The disadvantages of adopting this e-format are that individual delivery of products can be expensive and it is difficult to encourage online loyalty.

Some online success has been achieved in this sector. Few people have not heard about Amazon. The conventional book retailer Waterstone has established a trading relationship with Amazon and WH Smith and Blackwell have online stores. According

to Mintel (2000), Amazon.co.uk had a far bigger market share in the UK online book market than its rivals with 56 per cent of sales. Amazon.com held second place followed by Bertelsmann, WH Smith, Waterstone and Blackwell with sales of 9%, 5%, 2% and 1% respectively. Other well known pure players include play.com and cdwow.com.

Electronic products

Computers and electronic products are among the most frequently purchased items online. UK consumers spent over £2 billion online on electrical goods in 2003 (E-logistics 2004). The advantages to develop the e-format of electronic products selling are as follows (Rosen and Howard 2000):

- easy to explore a wide range of products and compare the prices from the Internet
- allow easy features and options research from the Internet before purchase
- in-store experience generally unpleasant

The disadvantages of adopting such an e-format include:

- touch and feel factor important
- instant utility satisfaction important with high priced products
- high priced and weighty products expensive to ship

In this sector, there are a large number of pure players such as Dabs.com, ebay.com, dell.com, apple.com, empiirect.com. There are a few major multi-channel retailers such as Dixons, PC World and Comet.

Apparel

Online clothing market turns out to be particularly appealing to some consumers, and several retailers have experimented and achieved success. Kim (2002) suggested that clothing enjoy more widespread sales. The advantages of adopting this e-format include (Rosen and Howard 2000):

- high margin sector and discount offered in the Internet
- products lightweight and cheaper to ship
- short shelf life, needing rapid market exposure and delivery

The disadvantages of adopting this e-format are:

- high touch and feel factor required
- a high return rate as try-on not possible
- problems related to sizing and fit

In spite of all the difficulties in adopting the Internet in the apparel sector, the market continues to expand and more and more people become comfortable buying clothes online. A survey conducted by the Economist (2004) suggested that online would never become the largest sales channel for clothing but it would be one of the best-performing. The UK apparel industry is dominated by department stores (e.g. Marks&Spencer, Debenhame, John Lewis), catalogue companies (e.g. NBrown, Littlewoods, Red) and some niche online retailers (e.g. Asos.com, Figleaves.co.uk).

Household Appliances and Furniture

The products from this sector are normally heavy-weight and high-priced, such as washing machines, refrigerators and cleaning vacuum etc. The market is developing rapidly. The followings are advantages to adopt an e-format:

- standard products and low utility satisfaction need
- easy to explore a wide range of products and compare the prices from the Internet
- allow easy features and options research from the Internet before purchase

The disadvantages are:

- difficult and expensive to ship
- special skills required in handling, shipping and installation
- returns are more difficult

At present, most major household appliances and furniture retailers such as Argos Company, B&Q, IKEA, MFI, DFS have an online presence. Some other retailers such as John Lewis, M&S, Tesco and Sainsbury also have online furniture business. Pure players include Furniture123.co.uk and home-furniture-direct.co.uk etc.

3.3.6 Summary

This section described the UK retailing industry including catalogue companies. It is an inevitable trend for companies to embrace the online channel and become multi-channel retailers. Pure Internet players have cost and scale advantages but they need to build up a strong brand. The online shopping market was also examined by sectors. The degree of the impact of e-commerce on the sectors may vary but its influence is everywhere.

3.4 CONCLUSION

In the past few years, the various aspects of e-commerce have touched virtually all companies in all industry sectors. The Internet has become a high profile and valuable sales and marketing tool for organisations. It is difficult to find high street retailers and catalogue retailers who do not have an Internet presence. The proliferation in the number of pure players and their success have intensified the competition in the e-marketplace. Multi-channel retailers enjoy wider customer base and market exposure and they can take advantage of existing facilities. Pure players have to demonstrate good reliability to attract and retain consumers.

This chapter discusses the development of e-commerce and its impact on the retailing industry. It provides insights into the comparisons between traditional retailing and online retailing. The concepts of multi-channel retailers and pure Internet players, the two critical concepts of this thesis, are explored. The chapter focuses on the general description of e-retailers and related background information, rather than their home delivery operations, which will be discussed in Chapter 5. The next chapter will examine the third party logistics providers in the UK and how they are related to e-retailers.

CHAPTER FOUR: LOGISTICS SERVICE PROVIDERS IN THE B2C ONLINE MARKET

4.1 INTRODUCTION

Logistics service providers (LSPs) play an important role in forming consumers' perception of the home delivery service quality provided by e-retailers as much of the e-fulfillment process is outsourced to LSPs (Rowlands 2003). It is difficult to find an e-retailer who does not outsource at least part of the fulfillment. This chapter presents the concepts and functions of LSPs in both traditional and e-commerce environment. The chapter first considers definitions of LSPs. Secondly, the driving forces and classifications of LSPs are discussed followed by a review of the UK LSP industry. Next, changes of distribution channels in the e-commerce environment are examined and the impacts of e-commerce on LSPs are explored. Finally, conclusions are provided to lead to the next chapter on e-PDSQ framework development.

4.2 LOGISTICS SERVICE PROVIDERS

4.2.1 Definition of LSP

The outsourcing phenomenon has become one of the dominant business trends since the 1980s (McKinnon 1999). It is becoming increasingly popular that companies keep their core business in-house and contract out ancillary functions to specialty service providers. This trend has a fundamental influence in the development of logistics (Rushton et al. 2000). Logistics is traditionally regarded as a supporting function, handled by companies internally (McKinnon 1999, Razzaque and Sheng 1998), thus it becomes "an obvious candidate for externalisation" (McKinnon 1999 p.215). Lieb (1992 p.29) described the evolution of outsourcing as "one of the most widely discussed contemporary topics in the field of business logistics". Various terms have been introduced to describe firms who perform logistics activities on behalf of others, such as third-party logistic (3PL) firm (Lieb 1992, Virum 1993, Langley et al. 1997, Murphy and Poist 1998, Van Laarhoven et al. 2000), logistics service provider (LSP) (Delfmann

et al. 2002), or contract logistics firm (Razzaque and Sheng 1998, Sink et al. 1996). These terms generally mean the same thing (Lieb et al. 1993). They denote external suppliers who “perform functions that can encompass the entire logistics process or selected activities within that process and that have traditionally been performed within an organization” (Van Laarhoven et al. 2000 p.425). These logistics functions, according to the Council of Supply Chain Management Professional web site (2006), include planning, implementation and control of flows of goods, services and related information.

Goldsmith (1989) identified public warehousing as probably being the oldest form of outsourcing in logistics. McKinnon (1999) pointed out that there has been a long tradition for companies to contract out freight transport. He attributed the increase in contracting out transport function to the deregulation of road haulage over the past 30 years and general change in managerial attitudes to outsourcing in the 1980s and 1990s. The outsourcing activities have been developing beyond basic transport and warehousing functions. More sophisticated or value-adding activities such as inventory management, materials handling, processing, packaging, distribution and order processing are also outsourced by companies (Razzaque and Sheng 1998).

4.2.2 Driving Forces for Outsourcing

There is rich literature on the analysis of factors that have driven the development of outsourcing. Two major strategic reasons driving companies to externalise their operations have been identified: pursuit for higher service standards and pressure for cost reduction (Van Laarhoven et al. 2000, Davis 1999, McKinnon 1999, Peters et al. 1998, Bradley 1995, Maltz 1994, LaLonde and Maltz 1992). Van Laarhoven et al. (1994, 2000) did two surveys in 1993 and 1998 respectively, studying the outsourcing activities of some European companies. Cost reduction and service improvement were found to be the top two factors promoting outsourcing in both surveys. LSPs can achieve cost reduction by increasing utilisation of resources and assets through shared operations management for more than one company. Labour costs also tend to be lower for LSPs (Davis 1999). LSPs possess logistics management as their core skill, providing their clients with access to specialist expertise and experience, which are difficult to

acquire in-house. Thus the service standards can be raised and service quality improved. And companies which outsource are able to focus on the core business and deliver better customer service.

Globalisation is also viewed as a prominent driving force behind outsourcing (Byrne 1993, Foster and Muller 1990, Sheffi 1990). The supply chain is getting more complicated with the growth of global market (Bradley 1994). The expansion of multinational companies into foreign countries demands higher logistics operation level and local knowledge and infrastructure support (Razzaque and Sheng 1998, Cooper 1993, Bovet 1991). Manufacturers depend on LSPs, especially local LSPs to source from abroad and distribute the products to other countries.

Outsourcing provides companies with great flexibility (Laarhoven et al. 2000, Peters et al. 1998). They can either contract out management only or the whole in-house system. LSPs are capable of adopting leading edge technology and reconfiguring the distribution system to adjust to changing markets (Trunick 1989). LSPs also have the ability to pull together the resources to achieve optimum utilisation. Companies can use the in-house operations for basic traffic and outsource for peaks when the market demand surges beyond its capability. Geographically, companies can use LSPs for more remote areas. Also certain products that are not compatible with companies' system or difficult to handle can be outsourced.

Fernie (1989) suggested that the structural change in the retail supply system has promoted the use of LSPs. From the 1970s and 1980s, the British retailers were taking more control of the supply chain and the operations were getting more centralized. Centralization of distribution into Regional Distribution Centre (RDC) made the economics of outsourcing an incentive. Retailers can concentrate on store management and leave the RDC management to LSPs (Fernie 1999). The emergence of a series of new techniques in retailing industry such as Quick Response (QR), Efficient Consumer Response (ECR) and Just-in-Time (JIT), demands more efficient logistics network (McKinnon 1999). Suppliers have to make more frequent delivery in smaller quantities to retailers, which generates a great market for LSPs. In general, outsourcing decision is based on the overall company strategy and the need to solve a specific logistical problem (Fernie 1999).

4.2.3 Classification of LSPs

LSPs differ in the services they provide to their customers. Table 4.1 provides an overview of functions LSPs typically perform.

Function	Activity
Transportation	Shipping, forwarding, (de)consolidation, contract delivery, freight bill payment/audit, household goods relocation, load tendering, brokering
Warehousing	Storage, receiving, assembly, return goods, marking/labelling, kitting
Inventory management	Forecasting, location analysis, network consulting slotting/layout design
Order processing	Order entry fulfilment
Information system	EDI/VANS, routeing/scheduling, artificial intelligence, expert systems
Packaging	Design, recycling

Table 4.1: Activities Associated with LSPs

(Adapted from Sink et al. 1996)

The functions LSPs perform were divided into two broad groups by Engelsleben (1999): service that are directly related to the physical flow of goods, and service that are not directly related to the physical goods flow (Table 4.2). The former was further divided into core processes and value-added activities and the latter was divided into management support and tools, and financial services.

Activities which are directly related to the physical goods flow		Activities which are not directly related to the physical goods flow	
<i>Logistics core processes</i>	<i>Associated 'added value' activities</i>	<i>Management support and tools</i>	<i>Financial services</i>
Transportation: shipping, forwarding, brokering, (de)consolidation, contract delivery Warehousing: storage, handling, commissioning, packaging, paletting, etc.	Assembly, quality control, merchandising, receiving / order entry, fulfilment, return goods, handling, kitting, marking/labelling, project-related consulting/ forecasting, tracking and tracing, routeing, scheduling, etc.	Logistics project controlling, anticipative logistics consulting, location analysis, layout design, MRP, DRP, development, EDI etc.	Factoring, invoicing / freight bill payment / audit, insurance services, etc.

Table 4.2: A Classification of Functions of LSPs

(Adapted from Engelsleben 1999)

LSPs can be classified on either a shared-user or dedicated service basis (McKinnon 1999). Shared user service allows the maximum utility of facilities as one LSP works

for a few clients who share the warehouse or the fleet. Dedicated service normally implies a more trusting and committed relationship between a LSP and its client as the LSP dedicates a whole warehouse or fleet to the client. Shared-user service is more directly related to the physical flow of goods; while dedicated service may include management and financial support, apart from the basic and associated logistic functions.

Another way to classify LSPs relates to the degree of customisation (see Figure 4.1). According to Delfmann et al. (2002) the first group is standardizing LSPs, which “only offer standardized and isolated logistics services or distribution functions, e.g. transportation and warehousing” (p.205). They are highly specialized in their field and offer standardized services to their customers. The second group are bundling LSPs, which “combine selected standardized services to bundles of logistics services according to their customers’ wishes” (p.205). The bundles of such services normally consist of a core logistics activity and secondary activities. The third group are customizing LSPs, which “design logistics services and logistics systems according to the preferences of their customers” (p.205). The core competency of customizing LSPs lies on the conceptual and coordination side, as they themselves often outsource individual logistics activities to standardizing LSPs.

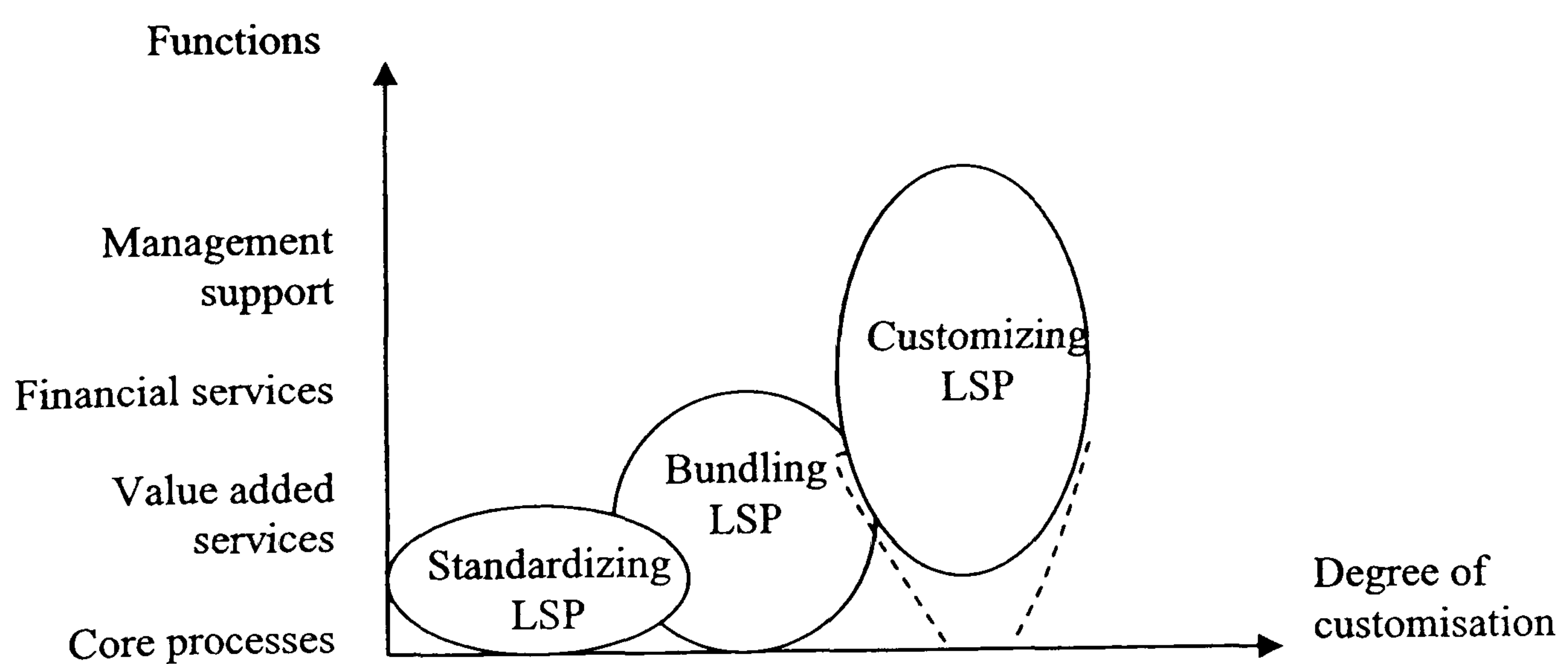


Figure 4.1: LSP Clusters

(Source: Delfmann et al. 2002 p.207)

Larsen (1999) placed the relationship between LSPs and their clients on a continuous scale, going from single transaction to integrated service agreements as is shown in Figure 4.2. The left part of the scale reflects the short-term relationship between

shippers and LSPs and price is the main leverage. Moving towards the right, the relationship is based on long-term and formalized contracts. In partnership agreement, LSP normally provides standard service while the client keeps the planning and management functions. In third party agreement, LSP provides much more tailored service based on the client's requirement. Mutual trust and effective information exchange are crucial. Sometimes the LSP assumes the responsibility for the personnel, equipment and plant of the client. In integrated service agreement, which has the highest degree of commitment, the LSP takes over the whole of large parts of the logistics process, including the management and control. In this situation, the LSP is also called 4PL. This relationship also features the partial integration of the two companies' information systems and the formation of inter-organizational teams of employees.

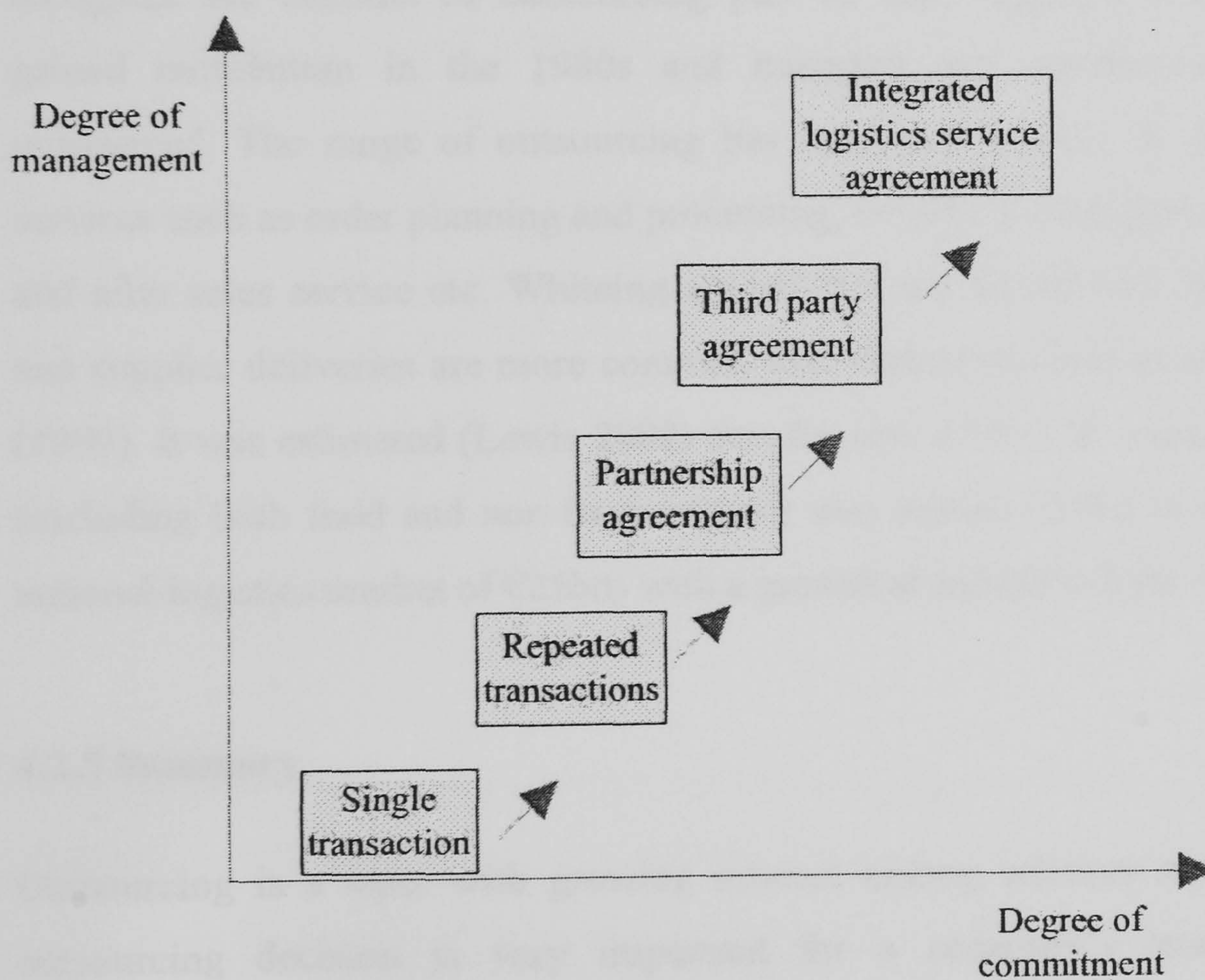


Figure 4.2: Relationships between Shipper and LSP

(source: Larsen 1999 p.114)

4.2.4 The LSP Industry

The scale of the logistics outsourcing market has been expanding and the value of LSP contracts in Europe was estimated to be worth around €70bn in 2005 (Allen 2003). It has been suggested that the UK LSPs are among the most enthusiastic participants in

the pan-European operations due to the level of competition and maturity of the UK market (Bell 2004).

According to the UK Department for Transport (2006), since 1980 there has been a significant increase in outsource of road freight transport. Until the mid-1980s, tonnage lifted was shared equally between own account and outsourcing operation. Since then, the amount of own account tonnage has remained fairly steady, whilst outsourcing tonnage has increased from 680 million tonnes to 1,100 tonnes, so that by 2004 it accounted for nearly two thirds of all tonnage lifted.

Waller (2001) argued that the larger grocers in the UK were among the first to recognize the benefits of outsourcing part of their logistics activities. Outsourcing gained momentum in the 1980s and transport and warehousing were the most outsourced. The range of outsourcing has expanded quickly to include value added services such as order planning and processing, inventory management, reverse logistics and after sales service etc. Whiteing argued that the shared-user distribution networks and supplier deliveries are more common than dedicated distribution on the UK model (1999). It was estimated (Lewis 2002) that the size of the UK contract logistics market (including both food and non-food sectors) was around €10bn in 2002 (out of a total national logistics market of €25bn) with a growth at around 6-8 per cent per year.

4.2.5 Summary

Outsourcing is a topic with growing interest among scholars and practitioners. The outsourcing decision is very important for a company's strategic development, especially in the long run. The UK is one of the most advanced LSP markets in Europe (Bell 2004). The next section is going to introduce the role of LSPs in B2C e-commerce market and considers how they can influence the home delivery service provided by retailers.

4.3 THE ROLE OF LSP IN THE B2C E-COMMERCE MARKET

4.3.1 Change of Distribution Channels in the E-environment

E-commerce has brought about changes in the supply chain configuration. The main factors of changes are “the emergence of electronic marketplaces in the upstream part of the supply chain (B2B sector) and the possible disintermediation of the downstream chain (B2C sector)” (Delfmann et al. 2002 p.210). Delfmann et al. (2002) explained how the emergence of the electronic marketplaces may have impacted on LSPs through the following major aspects. In the B2B market, e-commerce lowers search costs and makes the supplier in the upstream supply chain more visible. The long-term, stable relationships between suppliers and their customers are challenged and there is a change towards the unstable, spot-market relationships. And the suppliers are becoming more geographically dispersed. Fernie and Sparks (2004) argued that during the 1990s, the implementation of techniques such as JIT resulted in more frequent deliveries of smaller quantities. The long-term physical flows were substituted by irregular and fast-changing physical flows. The 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 who do not wish to possess any logistics know-how, they can use the dedicated services to design the complete logistics system.

The B2C market has even a bigger impact on the downstream supply chain. Chapter Three discussed that there is a possible disintermediation of the supply chain and retailers are no longer the only interface with the 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. Traditionally, retailers acquire commodities from wholesalers or distributors and then sell them to the consumers. The consumers were responsible for transporting the products home. Online shopping enables the 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, previous lay with the self-serving consumers are now taken by retailers. The extension of supply chain to consumers' home may stimulate greater complexity in

distribution systems management (Park and Regan 2003). 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 echelon or indirect distribution channel to hub-spoke network channel. Rather than products flow from manufacturers, to wholesaler or distributors and then retailers, products are despatched from a central warehouse of either manufacturers' or retailers' to carriers' local depots across the country. Figure 4.3 shows the hub-spoke distribution network of B2C e-commerce.

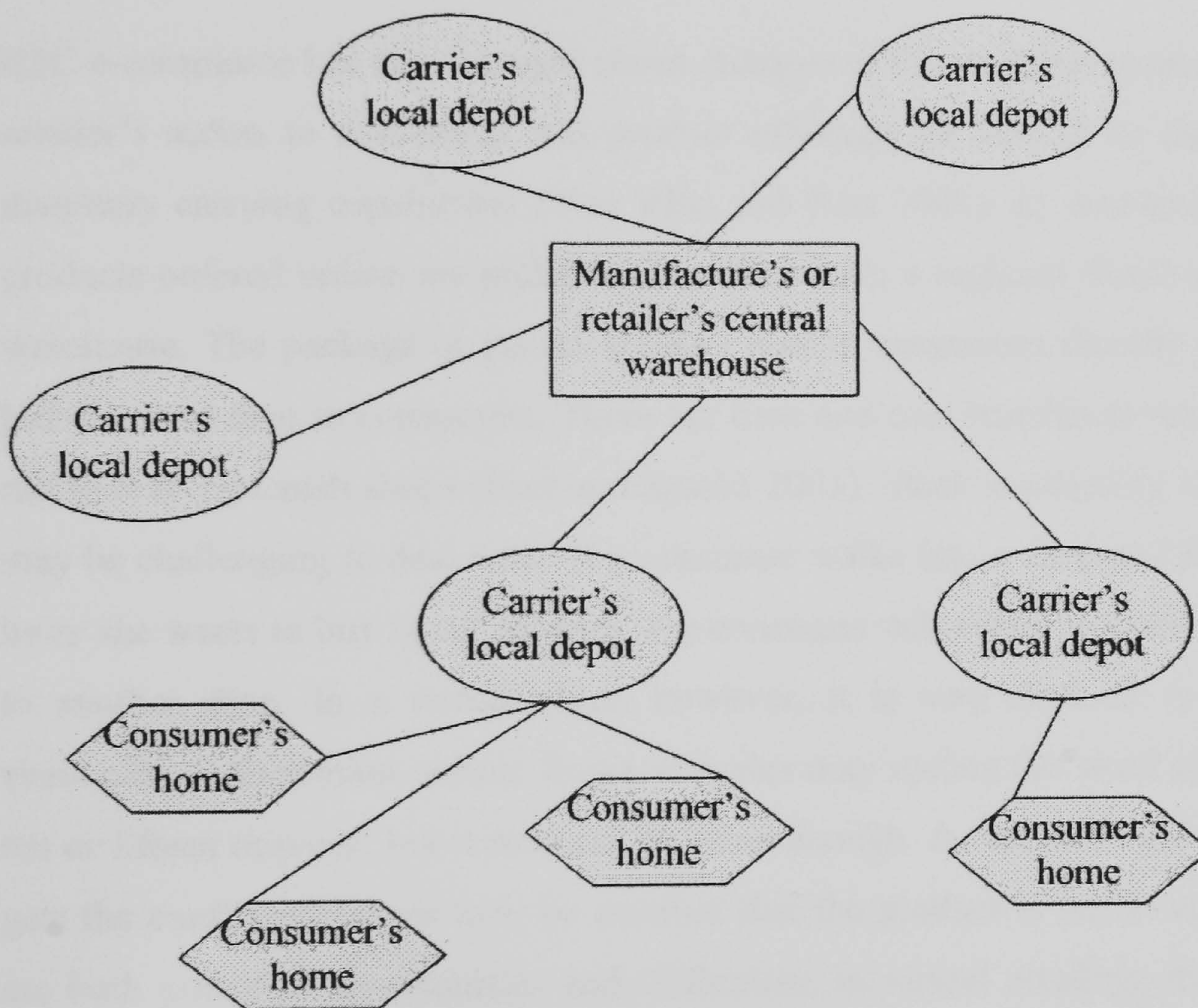


Figure 4.3: The Hub-spoke Distribution Network of B2C E-commerce

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 4.3 presents the distinct comparison of characteristics 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. Delivery time sensitivity is higher and delivery may be failed if consumers are not at home.

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

Table 4.3: Characteristics of E-commerce Delivery

(Source: Park and Regan 2003 p.6)

B2C e-commerce has also brought about changes of the stocking systems. A traditional retailer's access to consumers and product offerings are limited by the 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 or a warehouse. The package or parcel is either sent to consumers directly or to a carrier's hub first and then to consumers. There are time and cost benefits to retailers as they do not have to replenish shops (Burt and Sparks 2003). Stock availability in 'virtual' stores may be challenging to deal with. If a consumer walks into a shop and finds the product he or she wants to buy is out of stock, the consumer will either buy other products or go to another shop. In a virtual store, however, it is very difficult to keep real-time availability information online. Some websites may update the stock availability every ten or fifteen minutes, but it may not be good enough. A consumer places an order and gets the confirmation, yet may be notified that the product is out-of-stock later. There are both potential opportunities and difficulties in virtual retailing stock holding and inventory management.

4.3.2 The Impact of E-commerce on LSPs

Online shopping brings different logistics tasks and promotes 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 products 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. Catalogue companies have well-established home delivery network already and for them the change is mainly the ordering procedure.

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 two RDCs in the UK and outsources the final delivery to a few carriers. 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.

Therefore, B2C e-commerce has brought about huge opportunities for LSPs. New services that are different from conventional outsourcing activities are in great demand. Table 4.4 shows the range of services LSPs can provide for B2C companies.

System and management	The whole e-fulfilment system design including order taking and dispatching; Order tracking and tracing system; Reverse system design; Multiple carrier management system; Vehicle route planning system for multiple delivery drops.
Warehousing	A 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 ranging 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 4.4: Outsourcing Services in the B2C Market

The table demonstrates the outsourcing activities in the B2C market which highlights the differences between B2C e-commerce outsourcing and conventional outsourcing. Firstly, many traditional retailers lack the expertise to develop a transactional website and an electronic ordering system. They either buy one website or look for external help. They also need IT integration of different channels including software to manage multiple carriers, to design a reverse process or to plan vehicle routes for multiple delivery drops. Secondly, in terms of warehousing, retailers need LSPs to have a system to sort, pick and pack individual orders. The warehousing should also have an in-time availability informing system which is linked to the website. Thirdly, retailers have to outsource the last mile deliveries to carriers which take parcels to their local depots across the country and then do the delivery. There may be special requirements for these deliveries. For instance, time-sensitive goods need to be delivered within a short order lead time; products such as flowers need special storage and delivery; alternative reliable delivery options have to be provided if consumers are not at home. Retailers also need to work with LSPs to provide order tracking and tracing system. Fourthly, retailers have to outsource returning operation to carriers which collect and replace returned products.

Another crucial difference between general logistics outsourcing and B2C outsourcing is that the latter has a bigger impact of service to end-users. For example, if a faulty or damaged product is dispatched to a shop by a LSP, it will not be displayed for sale as the staff will check and find out the problem. So consumers are hardly affected. But if a damaged product is delivered to a consumer by a LSP, it has to be returned and replaced. As a result the consumer may have a low perception of the service quality. The quality of packaging, shipping and handling process needs to meet consumers' expectations. Also retailers lose the opportunity to "collect valuable data across the value chain that can be used in refining their stocking and delivery plan" (Enders and Jelassi 2000, p.547). In the end, it is the consumers that are going to suffer the poor delivery service.

Due to the above challenges, many retailers' existing systems are not sufficient to cope with the Internet era so they have to outsource at least part of the operations (Doherty et al. 1999). Reynolds (2000) suggested that for many pure Internet players, the challenge of fulfilment when they started up was more of building up a massive and expensive inventory to minimise out-of-stocks, than developing a coherent stock control and

fulfilment management strategy. That is one major reason why some pioneering pure players such as Webvan failed. The distribution task can always be outsourced to LSPs or specialised companies. Mail order and direct marketing companies are thus in a better position to start an online channel and exploit the commercial potential of the Internet as they have established direct distribution system in place already. Table 4.5 demonstrates how some retailers outsource their B2C home delivery operations.

Outsourcing Activities	Amazon	John Lewis	B&Q	Dell
Ordering system				
Warehousing		v	v	v
Home delivery	v	v	v	v
Return	v	v	v	v

Table 4.5: Examples of Retailers' Outsourcing Activities

Traditional LSPs have seen the growth in the e-market and are eager to obtain part of the market share. In response to the surging demand, e-fulfilment specialists have also emerged and they specialise in the B2B and B2C marketplace. 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 customized 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 UK Forecast home delivery report (2000), the majority (93%) of home deliveries are small parcels and packages. A study by Foley et al. (2003) suggested that the annual average number of home deliveries per household could be nearer 22 using operating statistics from the 15 leading carriers. Rowlands (2003) 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 excess to existing parcel networks. Most last mile deliveries of small items to the end consumers are conducted on a shared-user basis by LSPs.

McKinnon and Tallam (2002) described the structure of home shopping channels. They defined and depicted postal delivery, parcel delivery and mail order delivery. Postal delivery is typically used when packages are small enough to pass through a letter box. Typical examples are small clothing items such as underwear or small gifts. 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 parcel” (McKinnon and Tallam 2002 p.17). These carriers tend to operate hub-satellite systems, comprising one or a few centralized 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 significant, a dedicated bulk shipment by a large truck can be arranged directly to the hub. Figure 4.4 shows how online shopping of small items are sent to consumers via an LSP’s parcel network.

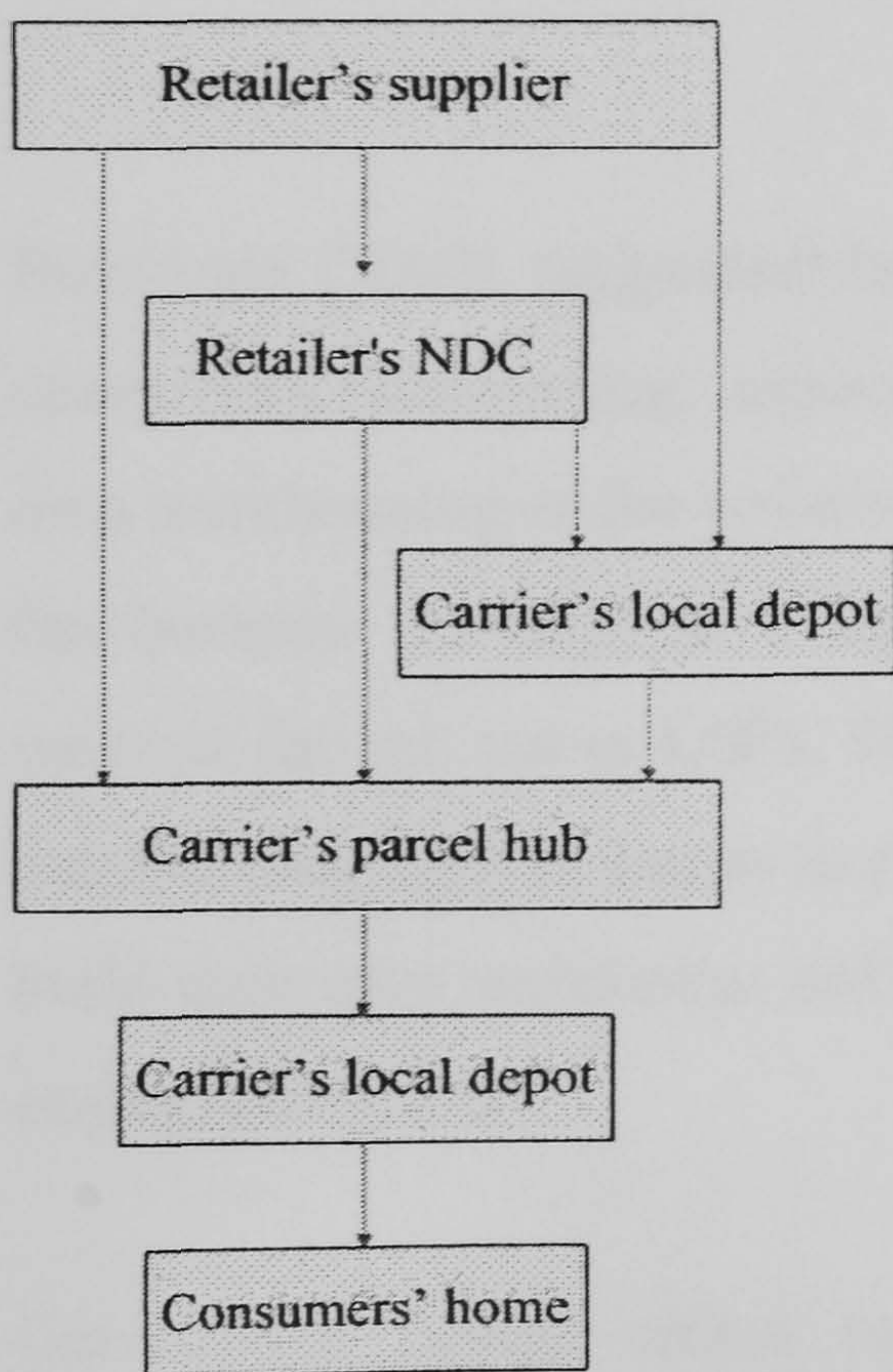


Figure 4.4: Online Shopping Delivery

(Adapted from McKinnon and Tallam 2002)

Catalogue mail companies have a long history of distributing and delivering goods themselves. Their distribution network normally consists of a NDC or central warehouse and a few local depots. Some of the big catalogue companies serve as LSPs and handle the home delivery for other retailers due to their strong network. They improve the utilization of their physical assets by consolidating other retailers’ flows

with their own. On the other hand, they may subcontract some home deliveries due to limited geographical coverage or seasonality factors. Figure 4.5 demonstrates general mail order channels.

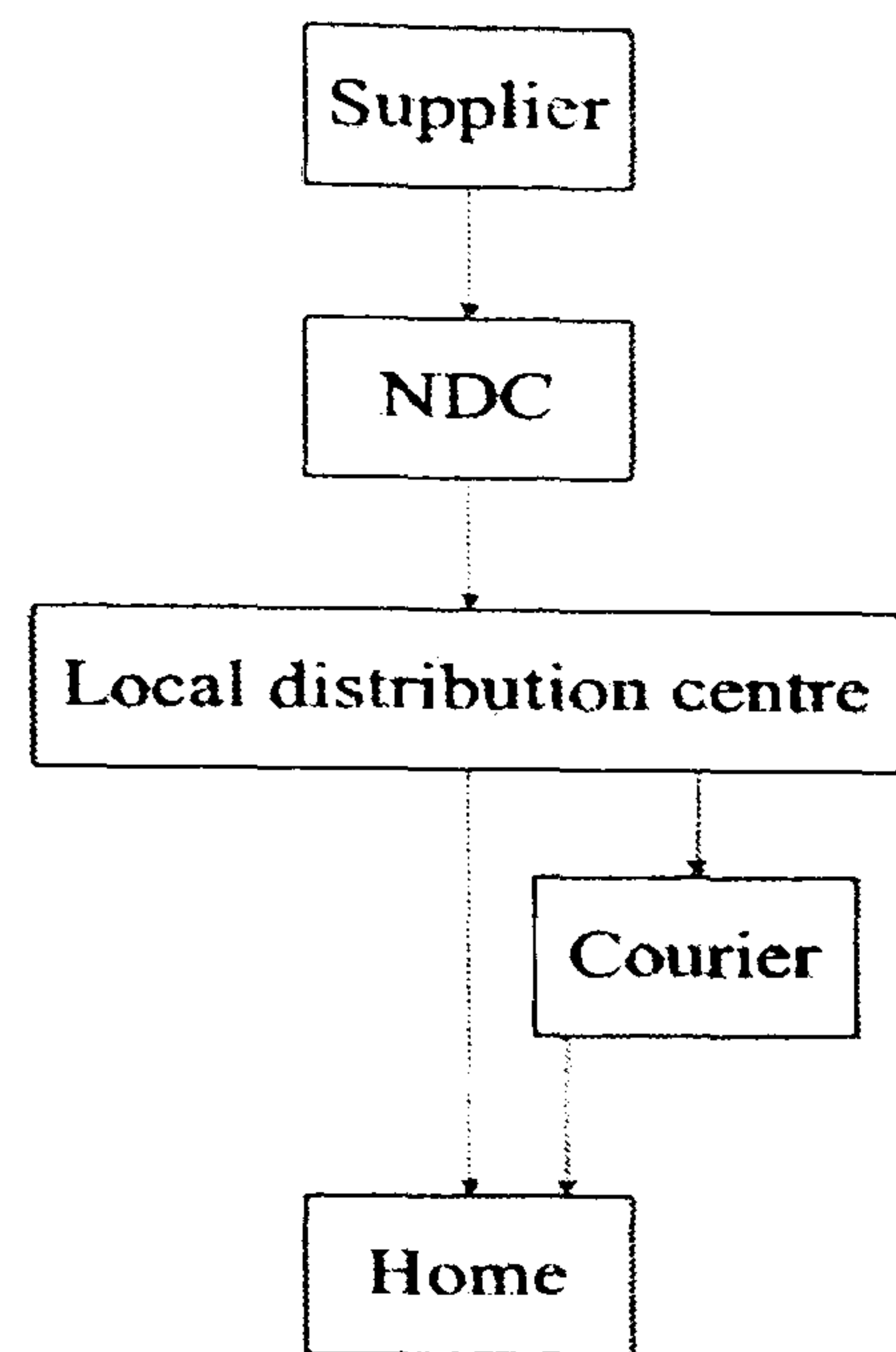


Figure 4.5: General Mail Order Channels

(Adapted from McKinnon and Tallam 2002)

Rowlands (2003) 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. Then the business continues to expand, retailers may take warehousing back in-house to get better control and to achieve economy of scales. They build their own warehouse and probably arrange their own delivery network. A typical example is Boots.

Outsourcing brings online retailers 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 as suggested by Rabinovich (2004), 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.

4.3.3 Summary

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.

4.4 CONCLUSION

The UK outsourcing industry 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 there has been literature identifying the trend of the increasingly use of LSPs by multi-channel retailers as well as pure Internet players, very little has been discussed on the 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. This gap in the literature needs to be addressed.

This chapter introduced the concepts of LSPs and reviewed the development of the UK LSP industry. The change of distribution channel in the B2C e-commerce has a huge impact on the outsourcing industry, which will be explored in the empirical studies. The following chapter will discuss the e-fulfilment processes and develop the framework of e-physical distribution service quality.

CHAPTER FIVE: E-PHYSICAL DISTRIBUTION SERVICE QUALITY FRAMEWORK

5.1 INTRODUCTION

Service quality issues are pivotal to a retailer's success (Parasuraman et al. 2005, Yang et al. 2004). Chapter Two discussed the concepts and models of traditional service quality; Chapter Three examined the development of B2C e-commerce in the UK and the emergence of multi-channel and pure Internet players; Chapter Four introduced the UK LSP market and the impact of B2C e-commerce on it. This chapter introduces e-service quality (e-SQ) and especially e-physical distribution service quality (e-PDSQ) in light of discussion in the previous chapters. E-SQ models are reviewed and the importance of e-PDSQ is discussed before an e-PDSQ framework containing four dimensions and twelve variables is developed. Finally, the e-PDSQ framework is elaborated and other home delivery related issues are explored.

5.2 E-SERVICE QUALITY

5.2.1 Definition of E-Service Quality and Its Elements

The Internet as a shopping and distribution channel has reinforced the importance of service quality in attracting and retaining customers as service quality is an effective means to achieve competitive advantage and differentiating strategies (Yang et al. 2004). However, lack of experience and inadequate understanding of online consumer behavior have made e-retailers encounter problems and challenges in furnishing online service quality (Yang and Fang 2004). Good service can give consumers confidence to use this new shopping channel, especially when they buy from pure Internet players. If consumers can't complete the transactions, have difficulty in having their complaints dealt with properly, or don't get products delivered in time, they may be unwilling to take the risk at buying from an e-retailer again.

Rust and Lemon (2001 p.86) described e-service as "...providing a superior experience to consumers with respect to the interactive flow of information". Tih and Ennis (2006 p.291) defined online service performance as "the degree of perceived service performance delivered via the Internet infrastructure". Santos (2003, cited from Lee and Lin 2005) defined e-service quality as overall customer assessment and judgment of e-service delivery in the virtual marketplace. This thesis adopts the definition proposed by Zeithaml et al., "the extent to which a Web site facilitates efficient and effective shopping, purchasing, and delivery of products and services" (2002 p.363). When proposing an e-service model, Gronroos et al. (2000) divided online service into a functional dimension (what is delivered in terms of service outcome) and a technical dimension (how is it delivered in term of service process). Commenting on their model, Bauer et al. (2006) suggested that an additional dimension comprising all aspects that take place before the actual delivery of the service should be included.

A considerable amount of research has been done on e-SQ and the criteria that consumers use to evaluate the SQ delivered through the website have been explored widely. These criteria range from website design (how well the website is presented and how easy it is to use), information availability and search (the availability and reliability of product claims made by the retailer), security issue (how well consumers' personal information is handled), customer service (how easy it is to contact customer support for enquiries and problems), to order delivery (Xing and Grant 2006). Table 5.1 summarizes the main e-SQ studies.

Article	Website design (ease of use)	Information availability and content	Security and privacy	Consumer service	<i>Order delivery (fulfilment)</i>
Trabold et al. (2006)	x	x	x	x	x
Tih & Ennis (2006)	x	x	x	x	
Bauer et al. (2006)	x	x	x	x	x
Parasuraman et al. (2005)	x	x	x	x	x
Lee and Lin (2005)	x	x	x	x	x
Rabinovich & Bailey (2004)					x
Yang et al. (2004)	x	x	x	x	
Yang & Fang (2004)	x	x	x	x	
Muyllé et al. (2004)	x	x			
Wolfenbarger & Gilly (2003)	x	x	x	x	x
Chen & Chang (2003)	x	x	x		x
Barnes & Vidgen (2002)	x	x			
Janda et al. (2002)	x	x	x		x
Liljander et al. (2002)	x	x	x		
Zeithaml et al. (2002)	x	x	x		x
Francis & White (2002)		x	x	x	x
Srinivasan et al (2002)				x	
Loiacono et al. (2002)	x	x			
Cox & Dale (2001)	x	x		x	
Yang et al. (2000)		x	x	x	
Szymanski & Hise (2000)	x	x	x		
Novak et al. (2000)	x	x	x	x	x
Kaynama & Black (2000)	x	x		x	
Dabholkar (1996)	x	x			x
Total	20	22	16	14	12

Table 5.1: Focus of E-Service Quality Studies

Table 5.1 highlights the major trends in the literature. Many studies focus on the consumer's interface with the websites, such as the development of metrics to evaluate web sites rather than the holistic shopping process. Loiacono et al. (2002) created WebQual, a scale for rating web sites on twelve dimensions relating to the content, usability and interactive attributes. This scale's primary purpose is to improve the web

site design rather than to measure customer service quality. Barnes and Vidgen (2002) developed another scale based on online book trade and it is also called WebQual. The scale consists of five dimensions: usability, design, information, trust and empathy. Again, this scale focuses on technical quality aspects, i.e. web site design rather than an overall assessment of customer service. Yoo and Donthu (2001) developed a nine-item SITEQUAL scale comprising of four dimensions: ease of use, aesthetic design, processing speed and security. Like WebQual, SITEQUAL didn't capture the order transaction, fulfilment and after sales service aspects and thus does not constitute a comprehensive e-SQ model. Cox and Dale (2001) discovered and validated four quality factors of a web site and they are: ease of use, customer confidence, online resources and relationship services. These factors are more related to web site interface than actual order transaction and fulfilment.

Some other studies provide a more holistic and comprehensive view of e-SQ but most of them were concerned with online service industries such as banking and flight travel and do not relate to the home delivery aspect of online shopping, which is often referred to as 'fulfilment', or 'e-fulfilment'. Pyke et al. (2001 p.27) posit that "order fulfilment involves all of the activities from the point of a customer's purchase decision until the product is delivered to the customer and he or she is fully satisfied with its quality and functionality." The term e-fulfilment emphasises "the need to ensure that the physical delivery of products ordered via the Internet is carried out effectively" (Rushton et al. 2000 p.541).

Yang et al. (2004) investigated online banking industry and derived a measurement of six dimensions: reliability, responsiveness, competence, ease of use, product portfolio and security. Tih and Ennis (2006) reviewed the literature and summarized three key components of online service: core service, web site and recovery service. Core service refers to the main offering which includes order transaction, keeping service delivery promises and consistency in service performance. Recovery service refers to after sales service. They examined their framework in the banking, air traveling and book industries without specifying order fulfilment.

In comparison with the above examples, relatively fewer studies involved non-service industry and attempted to assess e-SQ encompassing e-fulfilment. Lee and Lin (2005)

modified the SERVQUAL instrument to consider the online shopping context in book industry and examined how e-SQ affected overall customer satisfaction and purchase intentions. Their e-SQ model includes web site design, reliability, responsiveness, trust and personalization. E-retailer's capability of delivering goods as promised and providing up-to-date information belong to dimension reliability.

Trabold et al. (2006) reviewed extant literature on four industries including travel service, book retailing, financial services and health care and presented a framework on four dimensions: web site design, fulfilment/reliability, security/privacy and customer service. The fulfilment/reliability dimension includes on time delivery and ease of returns and refunds.

Bauer et al. (2006) interviewed thirty online shoppers and generated an eTransQual scale. They argued that most existing e-SQ models did not include elements referring to hedonic service quality elements. Thus their scale emphasized the hedonic quality elements along with the utilitarian elements. The five dimensions of eTransQual included: functionality/design, enjoyment, process, reliability and responsiveness. Fulfilment elements such as availability, timeliness and return belong to either reliability or responsiveness.

Zeithaml et al. (2002) did an explorative study in e-SQ and conceptualized a framework of five dimensions: information availability and content, ease of use, privacy/security, graphic style and fulfilment/reliability. Based on this study, Parasuraman et al. (2005) developed a very comprehensive two-set scale called E-S-QUAL and E-RecS-QUAL. E-S-QUAL addresses core service quality aspects and it contains four dimensions: efficiency, fulfilment, system availability and privacy. E-RecS-QUAL is related to service recovery such as product returns, dealing of complaints or problems. This latter scale is composed of three dimensions: responsiveness, compensation and contact.

Wolfenbarger and Gilly (2003) examined consumers' perceptions of online retailing quality and developed a fourteen-item scale called eTailQ. They found fulfilment was the largest and most consistent predictor of customer satisfaction and service quality, and the second strongest predictor of intentions to repurchase at a site (the other three dimensions were website design, privacy/security and customer service). They

suggested that fulfilment dimension involved accurate representation of the product, on-time delivery, and accurate orders.

Chen and Chang (2003) conducted in-depth interviews with online shoppers and identified three common components in online shopping process: interactivity (Internet connection, web site design, appearance and system capability), transaction (value, price, convenience and security), and fulfilment (delivery charges, warranty services, return and exchange policies, availability and quality of technical support). They argued superior fulfilment quality provides greater convenience to consumers and improves their confidence in using online transactions.

Janda et al. (2002) conceptualized an Internet retail service quality framework consisting of five dimensions. The first dimension was called performance and it contained transaction efficiency and delivery fulfilment components. They considered delivery fulfilment “measures a firm’s accuracy in product delivery and its willingness to correct mistakes occurring during the transaction” (2002 p.417). The other dimensions include access (product range and availability), security, sensation (consumer’s ability to interact with the product and with other shoppers), and information.

Novak et al. (2000) developed and tested a general model of the online customer experience to explore the factors that make using the Web a compelling customer experience. They also explored the key consumer behaviour outcomes of this compelling experience. Two variables related to fulfilment were quick delivery and easy return.

Dabholkar (1996) proposed that expectations of speed of delivery, ease of use, reliability, enjoyment and control would impact service quality expectations. Summarizing from the above analysis, there has been less attention related to physical distribution and consumer SQ. However, the fulfilment issue has strategically practical importance of ‘last mile’ home delivery and is attracting more and more attention from scholars.

5.2.2 Importance of E-PDSQ

Using Internet buying and selling is “a genuinely new medium for the trade” and has huge potential scale of operations (Rushton et al. 2000 p.539). Although online trading is conducted via the high technology, traditional ways of distribution are still required to complete the transaction, unless the commodity can be digitised such as music or movies. E-PDSQ is represented in the online shopping literature mainly by fulfilment. From a consumer’s perspective, fulfilment is generally accepted as a crucial attribute affecting their judgment of service quality and satisfaction. Fulfilment is identified as a key component in affecting post-purchase satisfaction. Some consumers will also look at the delivery terms and conditions before they make purchase decisions. Retailers who claim to offer good, clear delivery service and multiple delivery options have a better chance to be used by consumers.

A fully transactional web presence is far from enough to guarantee the successful order completion. The efficient management of distribution and fulfilment process is even more important. Fulfilment has been identified as one of the greatest challenges to successful e-retailing (Doherty et al. 1999, Geuens et al. 2003, Gurau et al. 2001, Chen and Leteney 2000, Doherty et al. 1999). Establishing a new logistical infrastructure and delivering products to Internet consumers in a speedy and reliable way proved to be the biggest barrier to its immediate development as a retail channel. Cooke (1997) identified logistics issues required to operationalise the online channel as the most neglected element of the value chain. Burt and Sparks (2003) critically reviewed the impact of e-commerce on the process of retailing and position of retailers. Five process issues were discussed including the fulfilment issue and the home delivery was considered a “big question mark hanging over e-retailing in all the literature” (2003 p.284). In a study attempted to explore the main issues faced by e-retailers, White and Daniel (2004) found that delivering exactly what the consumer ordered in a timely and cost effective manner was one of the five main challenges. Koster (2002) regarded order fulfilment to be of the utmost importance, as all online selling promises have to be realized through fulfilment processes. Doherty et al. (1999) investigated the facilitators and inhibitors for traditional retailers to develop the Internet as a channel. The need for a fulfilment infrastructure to support the logistics of Internet retailing was noted as significant.

Pavitt (1997 p.41) said that “without speedy, flexible and realistically priced delivery mechanisms, electronic shopping will never appeal to more than a tiny minority of shoppers buying durable products.” Evidence indicates that in the early 2000s, e-retailers failed to deliver the standards of service expected by consumers especially in terms of delivery (Dennis et al. 2002, Verdict 2000). Consumers were putting off shopping online by unreliable delivery, lack of delivery options and complicated return systems, especially during peak retail seasons. Lavin (2002) highlighted order fulfilment as a particularly important issue during busy selling seasons such as Christmas.

Retailers that can favourably satisfy fulfilment guarantees generate consumer value and attract loyal shoppers, who in turn, bring profits to retailers. Verdict (2004) suggested the most successful online retailers already have a strong home delivery operation. Figure 5.1 describes the online shopping process and highlights the importance of fulfilment to consumers’ post purchase satisfaction.

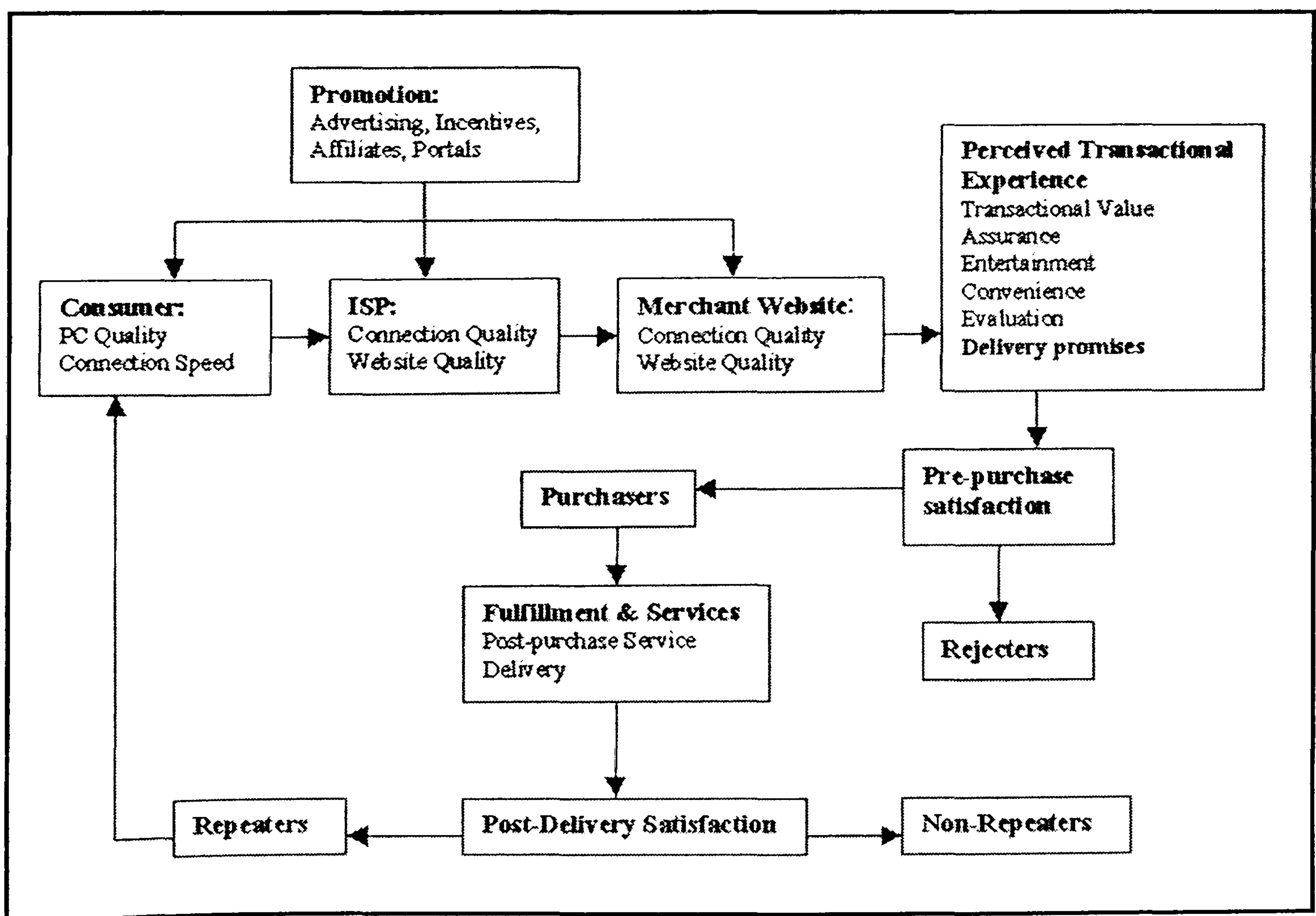


Figure 5.1: Descriptive Model of Online Shopping Process

(Source: Chen and Chang 2003)

5.2.3 Summary

This section introduced the definition and main elements of e-SQ. Key literature in this field was reviewed and summarized, which reveals that relatively fewer e-SQ studies have highlighted e-PDSQ, compared with other e-SQ attributes such as web site design. Thus there is a need to address the importance of e-PDSQ, or e-fulfilment, as was discussed in the latter part of the section. The next section explains the development of an e-PDSQ framework.

5.3 E-PHYSICAL DISTRIBUTION SERVICE QUALITY

5.3.1 The e-PDSQ Framework Development

Although e-PDSQ is becoming more important both academically and practically there are very few detailed studies in this area to date. Some e-SQ studies summarized in Table 5.1 mentioned e-PDSQ dimension but presented a limited number of e-PDSQ variables. These variables are demonstrated in Table 5.2. These variables are all fulfilment related although they were put under the dimensions with different names.

E-SQ Studies	E-PDSQ Dimension	E-PDSQ Variables
Lee and Lin (2005)	Reliability	Capability of delivering goods as promised, Providing up-to-date information
Trabold et al. (2006)	Fulfilment/reliability	On-time delivery, Ease of returns and refunds
Bauer et al. (2006)	Reliability; Responsiveness	Timeliness of order delivery, Accuracy of order delivery, Product availability; Availability of alternative, Return policy
Parasuraman et al. (2005)	Fulfilment Responsiveness Compensation	Orders are delivered as promised Order availability Quick delivery Order accuracy Accurate promises of delivery information Short order-to-delivery time; Convenient return options Handling returns well; Returns collection from home or work Late delivery compensation
Wolfenbarger & Gilly (2003)	Fulfilment/reliability	Order accuracy, On-time delivery, Delivery on the date promised, Quick order lead time, Order tracking and tracing, Product availability Shipping options, Good package
Chen and Chang (2003)	Fulfilment	Delivery schedule and options, Return Availability
Janda et al. (2002)	Fulfilment	Accuracy in product delivery, Ability to correct fulfilment mistakes
Novak et al. (2000)	Fulfilment	Quick delivery, Easy return
Dabholkar (1996)	Speed of delivery	Speed of delivery

Table 5.2: E-PDSQ Variables Summarized from E-SQ Studies

One of the few PDSQ studies is by Rabinovich and Bailey (2004) which provides insights in how e-PDSQ, represented by inventory availability, delivery timeliness and reliability, is affected by attributes of pricing, transaction and firms. Measurement of their dimensions is shown in Table 5.3.

Availability	The interval between the moment when the consumer places the order and Internet retailer ships the products to the consumer (click-to-ship time)
Timeliness	The interval between the moment when an order ships to the buyer and the moment when the buyer receives the order (ship-to-deliver time)
Reliability	The actual time from consumer order placement to delivery by the Internet retailer minus the Internet retailer's advertised expected time from order placement by the consumer to order delivery (click-to-deliver match)

Table 5.3 Measurement of Dimensions

(Adapted from Rabinovich and Bailey 2004)

Chapter Two discussed PDSQ in traditional context. Based on PDSQ constructs developed by Mentzer et al. (1989), Bienstock et al. (1997) and Rabinovich and Bailey (2004), a framework is proposed from the consumer's perspective that addresses the issues facing retailers who sell on the Internet, both multi-channel retailers and pure players (Xing et al. 2006). The framework consists of four dimensions, availability, timeliness, condition and return, each including several variables (see Table 5.4). Three dimensions are derived from existing PDSQ constructs but the variables included are especially related to an online context.

Dimensions	Variables
Timeliness	Choice of delivery date; Deliver on the first date arranged; Deliver within a specified time slot
Availability	Confirmation of availability; Substitution offer; Order tracking and tracing system
Condition	Order accuracy; order completeness; condition upon arrival
Return	Return channels options; promptness of collection; promptness of replacement

Table 5.4: E-PDSQ Framework Dimensions and Variables

Figure 5.2 depicts how these dimensions are incorporated into a consumer's online shopping process. Before a consumer makes an online purchase, he has certain expectations on e-PDSQ. When the consumer finally chooses an e-retailer after searching and comparison, he checks the availability of the product before placing the order. After the consumer places the order, it is then processed and sourced from either the retailer's warehouse or the retailer's supplier's warehouse. The order is then picked, packed and delivered to the consumer's home, preferably in a timely manner and good condition. Upon the order arrival, if the consumer is happy with the delivery, he accepts the product. Otherwise, the product has to be returned. The consumer develops his

perception of the e-PDSQ provided by the e-retailer during the whole online shopping process, which affects his repurchase decision.

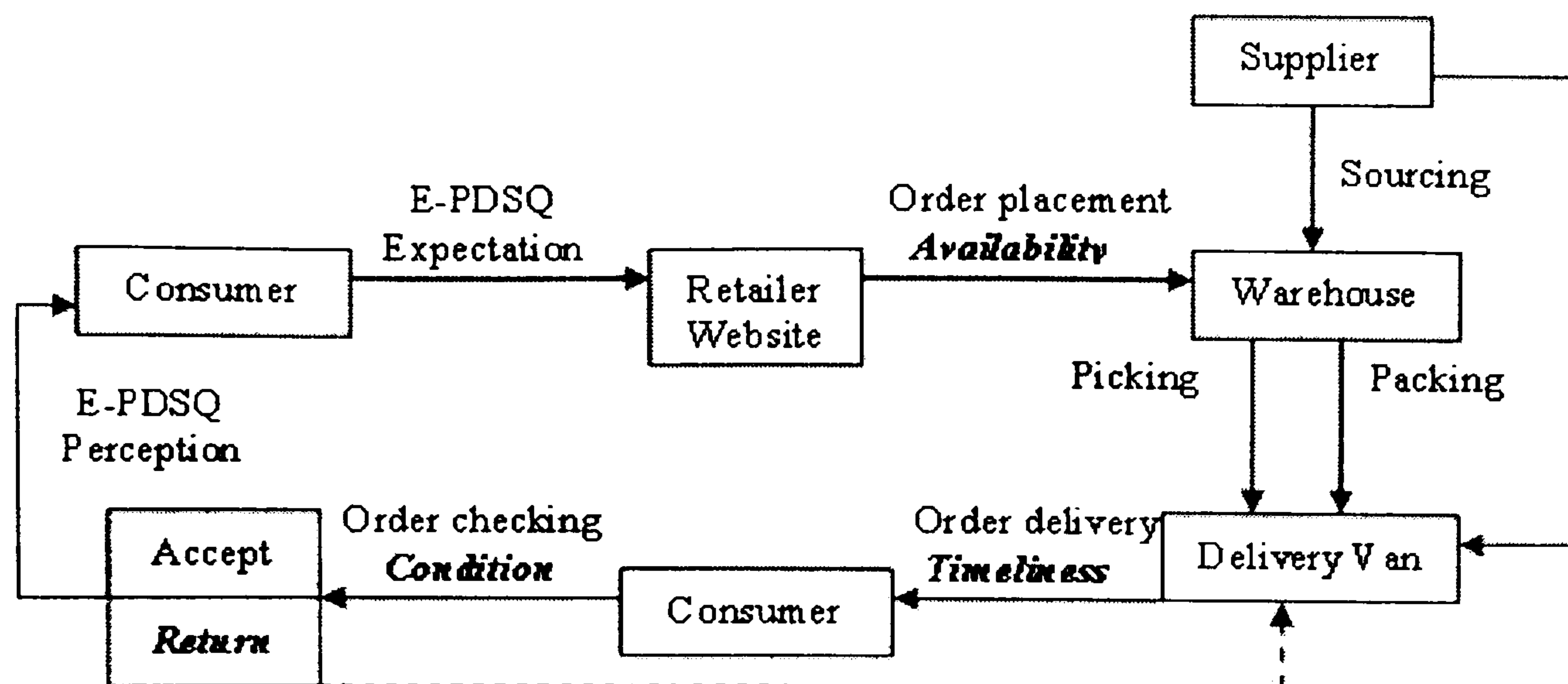


Figure 5.2: E-PDSQ Framework in the Online Shopping Process

(Source: Xing 2005)

Availability refers to inventory capability; i.e. having inventory readily sourced to fulfil 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 offered. Consumers would be deterred if products they want are out of stock. In a digital world, another website selling similar products is only a click away. Alternative offerings for substitution may be useful to retain consumers if used properly. Furthermore, availability considers how a consumer would be able to track and trace their order; this ability to trace and track orders is important to consumers. Their perceived lack of control over delivery of their orders makes them more eager to know when to expect arrival of orders.

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). It is about how many choices the consumer has over the delivery date and time window; how quickly the consumer receives the order and whether the retailer’s actual performance matches its promise when the order is confirmed. Reliable, on time and quick delivery is of central significance for the consumer (Klaus et al. 2001). The consumers are more likely to return products that arrive late and this point has an important impact on repeat purchase and the profitability of the business.

Condition is the “form and composition of the delivered order” (Bienstock et al. 1997 p.32). It relates to the accuracy and quality of the order. Nobody likes damaged, faulty or missing products, which result in return or even cancellation of orders. The condition and right quantity of products directly affects consumers’ perception of delivery service quality.

Lastly, **Return** is a dimension specifically related to the online context. Return logistics refers to the process that products are returned from the point of consumption to retailer or supplier for possible repair, resale, recycling etc. (Tarn et al. 2003). It is about how the retailer deals with damaged, unwanted or faulty products; how many channel options consumers have to return the products; and how promptly the products can be collected or replaced. Convenient and easy ways for returns serve as an important facilitator for consumers using online shopping.

5.3.2 E-PDSQ Framework Elaboration

This proposed e-PDSQ framework and its relevant dimensions and variables are illustrated in Figure 5.3 throughout the fulfilment process starting from order placement to order delivery and reception.

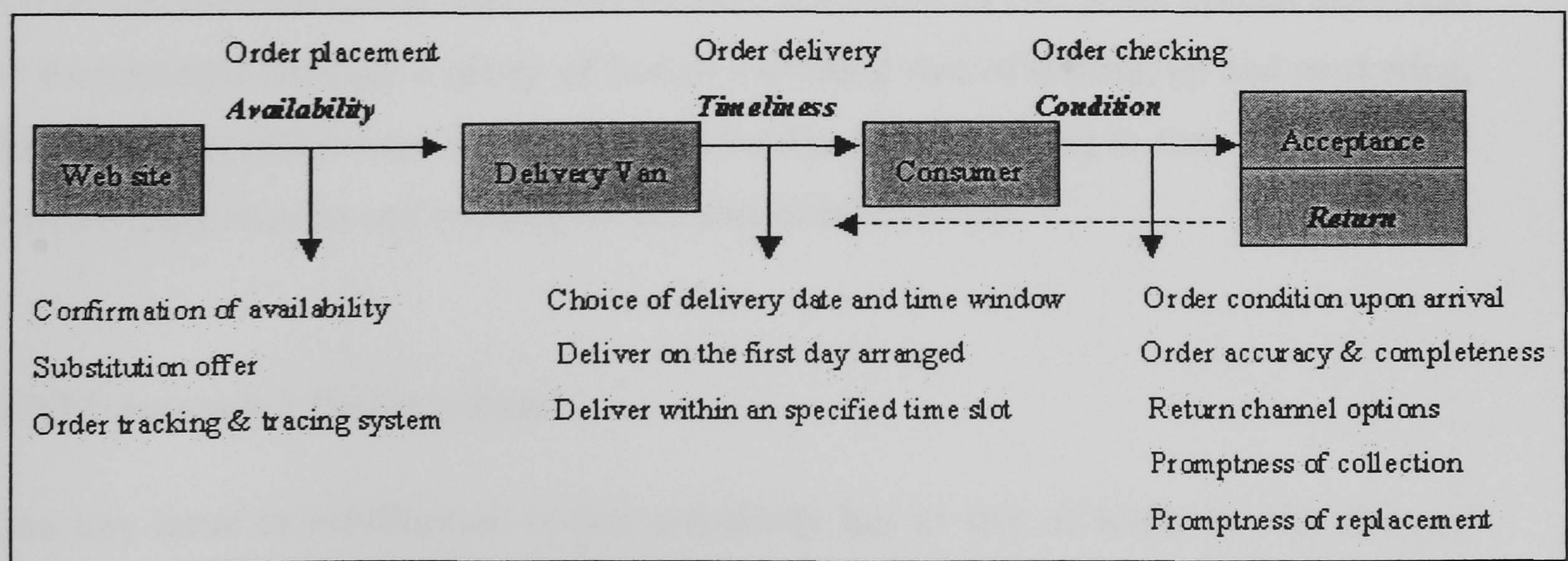


Figure 5.3: An E-PDSQ Framework from the Consumer’s Perspective

(Source: Xing and Grant 2006 p.285)

The framework shows that the ordering process starts with confirmation of availability which helps consumers to make purchase decisions. Many retailers confirm whether

products are in stock or not on the web site. Retailers such as ebuyer.co.uk and dabs.co.uk even tell consumers the number of products in stock. If a product is out of stock, the consumer can choose either to buy from other retailers or wait until new stocks arrive. Substitution may be offered by retailers at some stage. Order tracking and tracing systems tell consumers where their orders are and give them confidence of the order status.

During the order placing process, consumers are normally notified the delivery options. If a retailer offers multiple options with different order lead time, consumers can choose a date and time that suit them. And then it is the retailer's responsibility to adhere to its promise and delivery orders on the first date and time slot consumers have chosen. When the orders are processed, dispatched and delivered to consumers, they can check the order accuracy, i.e. whether it is the right product ordered; order condition, i.e. whether products are damaged in-transit; and order completeness, if the order has a few items. If the product is faulty, damaged or unwanted, then it has to be returned. Consumers need to know how easy they can return the product and how quickly it can be collected and replaced. During the whole process, consumers have perceptions of the e-PDSQ they received which in turn impact their repurchase decisions (Xing et al. 2005).

Rosen and Howard (2000) identified delivery and return as one of the crucial deterrents to e-commerce amongst a group of factors including cost of starting up and marketing, disintegration, technology and operational burden etc. Delivering in time increases first time delivery success and reduces the number of redeliveries.

5.3.3 Unattended Delivery Issues

One key issue in e-fulfilment is that somebody has to stay at home for the delivery unless the product is small enough to fit through a letterbox or into the mailbox at consumers' homes. Some social and economic factors such as long commuting time, increases in working women, the growth in single-person households and fixed working patterns are leading to homes being empty for longer periods in a day than they used to (Park and Regan 2003). Good communication and planning are required between

retailers and consumers in order to ensure the deliveries are successful (Brown 2000). Failed deliveries lead to higher operational costs due to the need of redelivery. In some cases, retailers may fail to deliver at the arranged date or time, which can result in a low customer perception or even a loss of sale. In other cases, it is the consumers who fail to stay at home so they have missed the deliveries. In both scenarios, a second or third delivery attempt will be made by retailers or consumers pick up products from a local depot. Figure 5.4 shows factors affecting whether consumers have to be present during delivery.

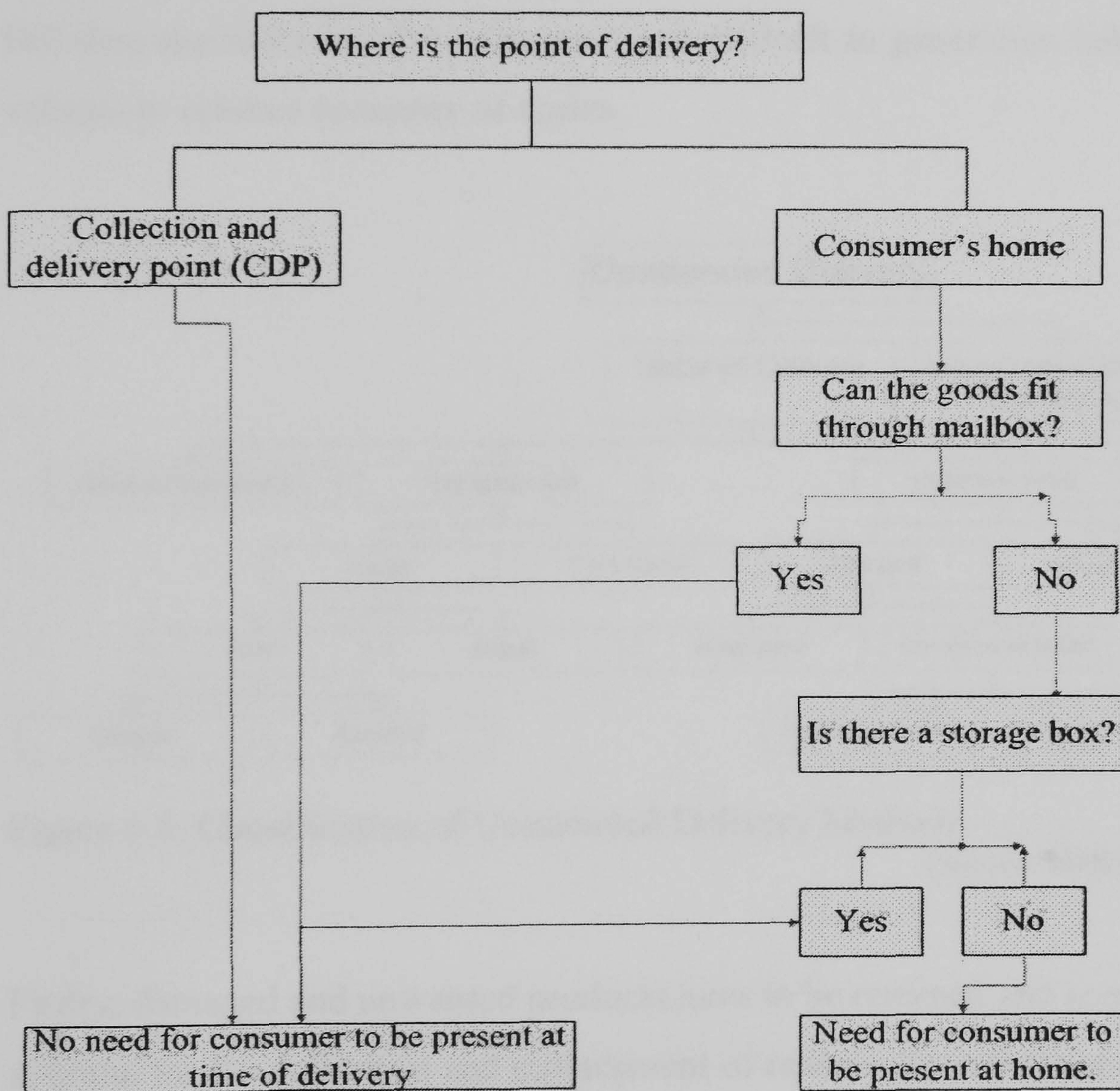


Figure 5.4: Factors Affecting Whether Consumers Have to Be Present during Delivery

(Source: Brown 2000 p.13)

Various solutions have been proposed and explored to solve the unattended delivery problem by McKinnon and Tallam (2002). As the volume of B2C sales expands, there may be a demand for these solutions. Figure 5.5 shows the classification of unattended delivery methods. 'Doorstepping', i.e. leaving products outside the home is considered to be unsafe and involves high risk which may result in theft or burglary (McKinnon and Tallam 2002). Secured delivery options include home access system, reception box,

collection point and drop-off / delivery service. Home access system is built into the consumer's premises and enabled delivery companies to have direct access into it. Reception box can either be a fixed and integral part of premises or an external facility and goods can be left in it. Collection point is where goods can be left for consumers to retrieve at a convenient time (McKinnon 2003). Post office, convenient stores, petrol stations and supermarkets may be ideal places to be collection points. Local collection and delivery service is an extension to collection point service, where the collection company picks up the order and delivers it to the consumer at a convenient time. These unattended options allows companies to optimize routes and schedules for deliveries. But they normally involve extra cost and difficult to generalize unless there is enough volume to achieve economy of scales.

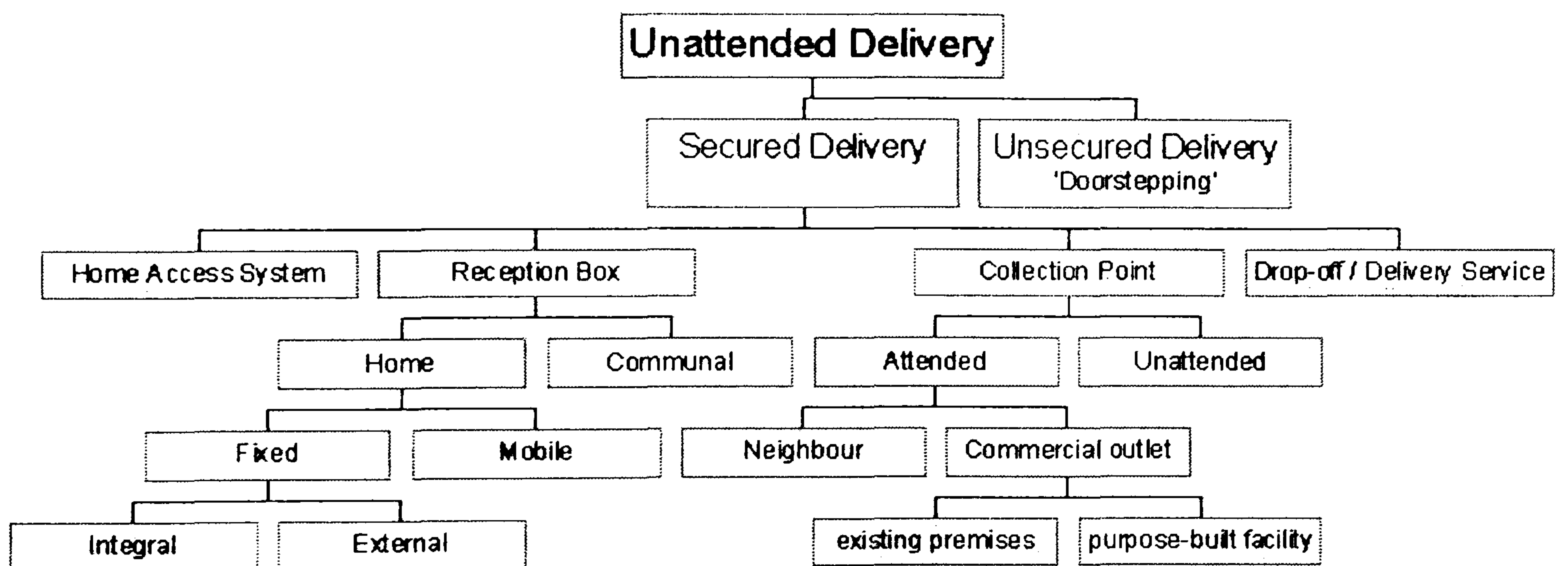


Figure 5.5: Classification of Unattended Delivery Methods

(Source: McKinnon and Tallam 2002)

Faulty, damaged and unwanted products have to be returned and consumers have to stay at home for the collection and replacement of returns. Return causes significant costs to supply chain in terms of fulfilment costs of supplying replacement, transport costs of collecting returns, administrative costs of dealing with returned products and complaints, and possible cost of losing a customer if things are not handled properly. Typically, online sales of non-food products have an average of 30% of return rate in contrast to 6-10% for traditional high street sales (Nairn 2003). The large flow of returned product is a challenge for e-retailers. Efficient, reliable and low-cost freight transport services are essential to make the B2C e-commerce market profitable. The market for managing returns is growing as the pace of e-commerce retail sales accelerates (Park and Regan

2003). Although the volume of return is much smaller than forward logistics, it is no less important in influencing consumers' perception on the retailer.

5.3.4 Summary

This section discussed the development of the e-PDSQ framework, which contains four dimensions and twelve variables. This framework was derived from traditional PDSQ and online fulfilment literature. Unattended home delivery issue and the solution options were also examined. There is a demand for these solutions but they can be costly to be implemented in a large scale unless there are sufficient volumes to achieve the economy of scales.

5.4 CONCLUSION

B2C e-commerce does not eliminate the need of the physical distribution systems; rather, it increases their importance (Gurau et al. 2001). As Chapter Three and Four discussed, physical distribution of goods bought electronically brings big changes in the supply chain. Bulky and homogeneous delivery of goods to stores is replaced by smaller, more frequent and heterogeneous delivery to households. These changes make it harder for retailers to provide speedy and accurate deliveries across a wide consumer base. E-PDSQ has strategic importance to an e-retailer's survival, whether it is multi-channel retailer or pure Internet player.

Although a few e-SQ studies have mentioned e-fulfilment as an important element, little detailed studies in e-PDSQ have been conducted so far. The e-PDSQ framework developed from the literature addresses this gap and provides the foundation for the empirical study. This e-PDSQ framework also provides preliminary answer for part of the first research question: to develop dimensions and variables of the framework. The latter part of RQ1 along with other research questions will be explored in the empirical studies. The next chapter will discuss the methodology used for this thesis.

CHAPTER SIX: RESEARCH METHODOLOGY

6.1 INTRODUCTION

Chapters Two through Five discussed the background literature that has shaped this research. This chapter provides the research methodology under which this study was conducted. First, the research objectives and research questions are reiterated, followed by a discussion of research paradigms in business and management field, with particular emphasis of the critical realist paradigm in logistics. Next quantitative and qualitative approach are described and compared as both are adopted by this thesis. The research design is then presented leading to discussions of issues related to survey and interview studies. Finally the chapter is concluded as a prelude to presentation of the empirical studies from Chapters Seven and Ten.

6.2 RESEARCH OBJECTIVES AND FRAMEWORK DEVELOPMENT

As introduced in Chapter One, this thesis is set in the 'triangle' conceptual model constituted by e-retailers, consumers and LSPs (see Figure 6.1).

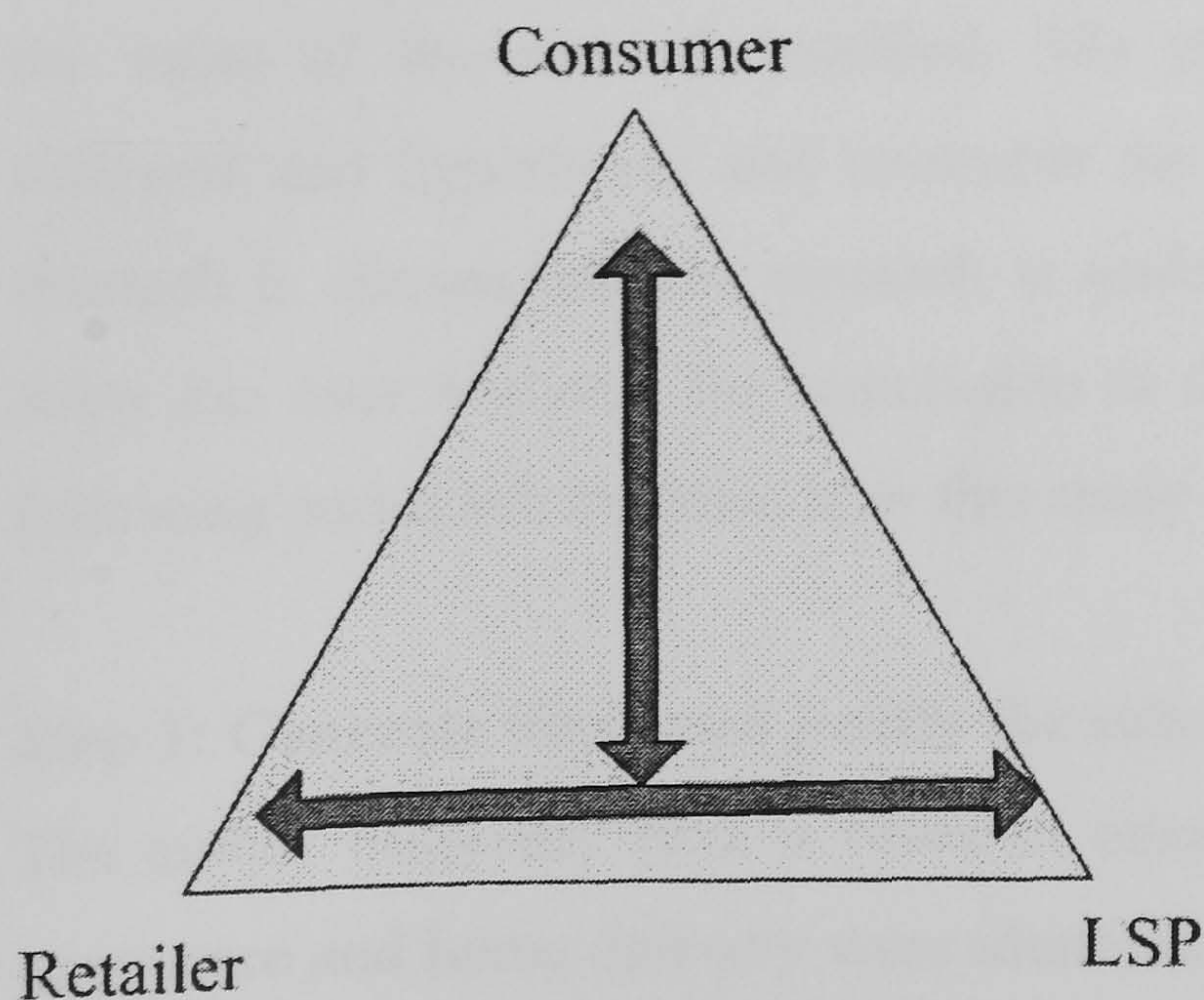


Figure 6.1: A Triangle Model in the B2C Home Delivery Market

(Adapted from Ritchie 2006)

With the emergence of e-retailers and the escalating competition among 3PLs and carriers involved in the B2C market, consumers' awareness of the home delivery service has been increasing. Thus it is worthwhile to find out the best home delivery practice and promote it. This thesis focuses on comparing the last mile home delivery services between multi-channel and pure players against an e-PDSQ model developed from the literature. The twelve variables of the e-PDSQ model serve as key performance indicators and will be investigated for their importance and influences on customer perceptions and satisfaction.

This thesis attempts to evaluate not only which type of e-retailer provides superior home delivery service from consumers' perspective, but also how retailers and LSPs perceive their own performances. This study will investigate factors, especially the impacts of LSPs on service quality as they perform the logistical tasks on behalf of many e-retailers. The home delivery market will be analyzed and suggestions will be proposed on how to improve the service quality. The findings will have important practical implications for retailers and LSPs in terms of better understanding consumer expectations and perceptions and improving services.

Mentzer and Kahn (1995) developed a framework of logistics research. Generally speaking, research starts with an idea generation, which can be derived from either observation or literature review or both. And then research questions are developed and the value of the research justified. The proposition of theory construction is thus followed and hypotheses and measures are developed. Next the methodology of the research is chosen and the research is undertaken by using one or multiple methods. After the data analysis, the conclusion is drawn and future study is stimulated. The following paragraph explains how this study has developed against this framework.

Step 1: Generate ideas and justify the substances

The author originally took a research interest in e-commerce and logistics. B2C e-commerce and home delivery were identified as more appropriate and specific research areas as a gap in the literature was identified. There were no comparative studies of the service quality between multi-channel retailers and pure players despite the scale of the e-retailing market. As Arlbjørn and Halldórsson (2002 p.22) put it, "the ultimate goal of

any research is to create new theories or tests and/or modify existing theories”. This research meant to create new tests and possibly new theories in the e-retailing and home delivery market.

Arlbjørn and Halldórsson (2002) proposed that it was necessary to distinguish the ‘hard core’, i.e. the real essence of a discipline and the ‘protection belt’, i.e. the boundary extensions. Meaningful research should focus on the hard core rather than linger around the protection belt. The hard core of logistics research is directed to the flow of materials, information and services (Arlbjørn and Halldórsson 2002). This PhD research is dedicated to the product flows in the supply chain, defining it more broadly than in the past and extending it to households. Thus it grasps the very essence of logistics research. Furthermore, e-PDSQ has strategic importance to an e-retailer’s survival and success. The research may have important implications for the operations of home delivery. The research results can promote good practice and improve service quality.

Step 2: Specify constructs

A large amount of literature in logistics, marketing, e-commerce and home delivery was collected and systematically reviewed. As a result research questions were identified and the domain of constructs specified. The domain of this study includes e-PDSQ, consumer perceptions and satisfaction and the relationship between e-retailers and LSPs (see Figure 6.2). The study aims to evaluate the e-PDSQ differences between pure and multi-channel retailers from the consumer’s perspective, and how the business structure and the relationship between e-retailers and LSPs may contribute to the differences. An e-PDSQ framework consisting of four dimensions and twelve variables is developed based on the literature. The seven research questions introduced in Chapter One are repeated here.

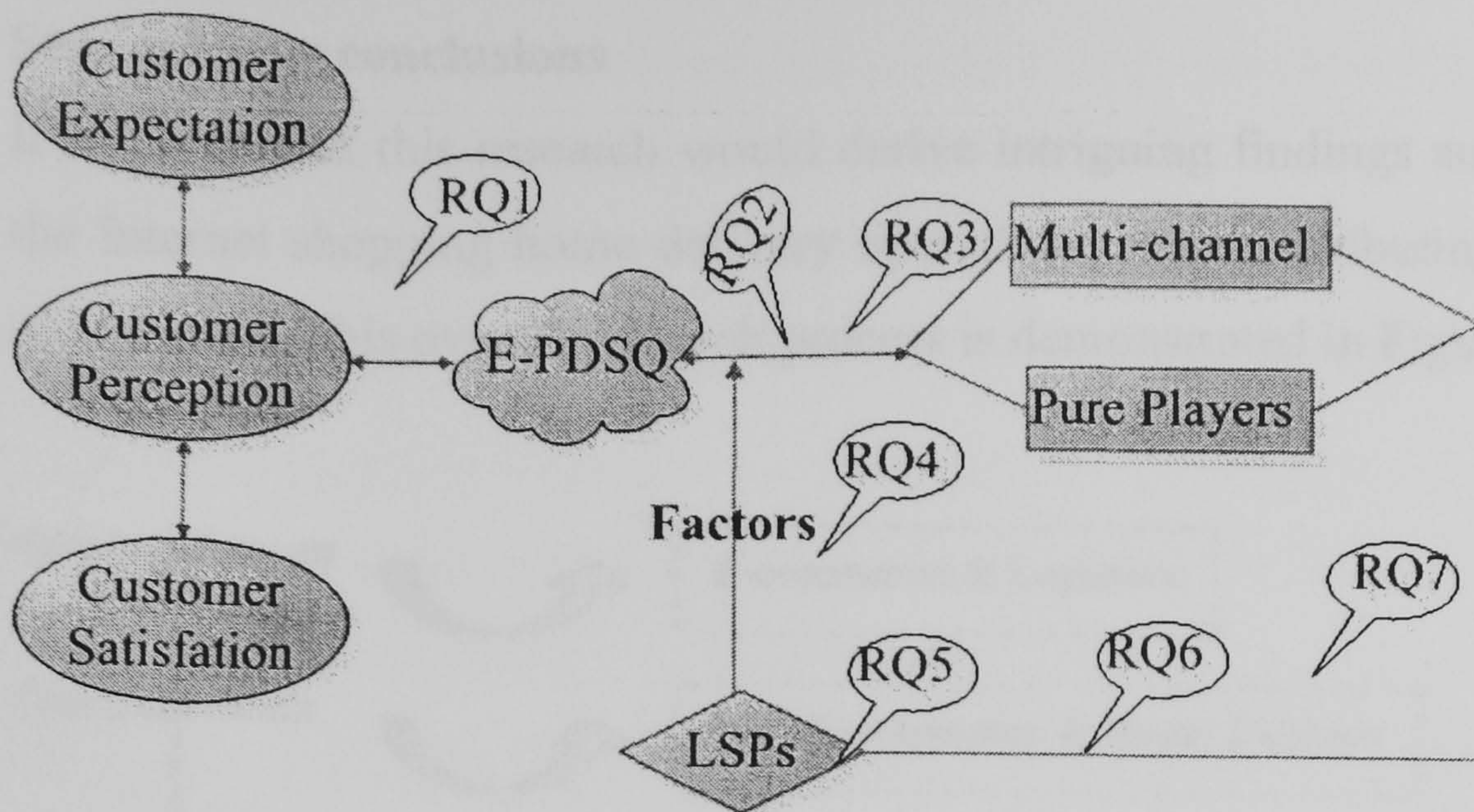


Figure 6.2: The e-PDSQ Conceptual Model

- RQ1:** *What are the e-PDSQ dimensions against which consumers rate e-retailers and how important are these dimensions?*
- RQ2:** *What are the differences in e-PDSQ between multi-channel retailers and pure players across these dimensions from the consumer's perspective?*
- RQ3:** *What are the actual home delivery performances achieved by retailers and LSPs against the e-PDSQ framework?*
- RQ4:** *What are the factors responsible for any e-PDSQ differences?*
- RQ5:** *How much do logistics service providers (LSPs) contribute to these differences?*
- RQ6:** *What are the problems and constraints in the home delivery market?*
- RQ7:** *How can companies address the perceived problems and constraints?*

Step 3: Methodology and analysis

After establishing the research questions and identifying the constructs, a sound research methodology, extending through research design from data collection to analysis, needs to be employed. This study adopts the two-stage method proposed by Churchill (1979) and Dunn et al. (1994) for scale and construct development in marketing and logistics respectively. The first stage consists of specifying the domain and variables from the literature, conducting a pilot study, and confirming or amending the variables. The second stage consists of conducting a main study to validate constructs and variables and develop norms. The details of research design will be described later in this chapter.

Step 4: Draw conclusions

It is hoped that this research would derive intriguing findings and provide insight into the Internet shopping home delivery operations, thus contributing to the existing body of literature. This overall research process is demonstrated in Figure 6.3.

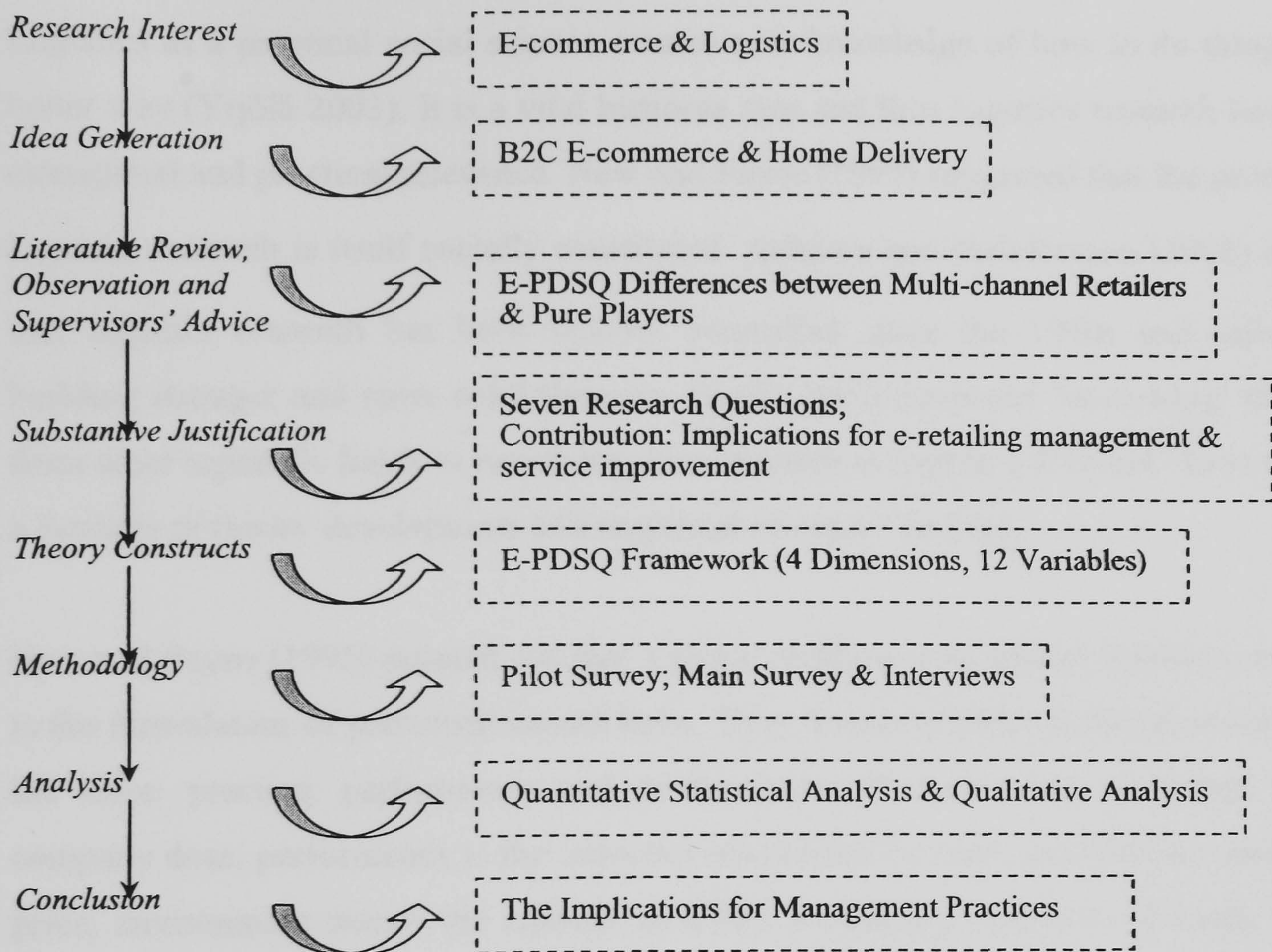


Figure 6.3: The Research Process Flowing Chart

The next section discusses theoretical and paradigmatic issues surrounding business research in general and the logistics discipline in particular.

6.3 RESEARCH PHILOSOPHY AND STRATEGY

6.3.1 Logistics Research Theory

“.....Falling between basic science and technology, they (practical social sciences) produce new knowledge which is intended to be useful for the specific purpose of increasing the effectiveness of some human activity.....Hence, the value of the results of

such applied sciences can be evaluated both in terms of epistemic and practical utilities” (Niiniluoto 1992, cited from Yrjölä 2003 p.80).

Logistics emerged as a ‘scientific’ discipline in the early 1960s (Arlbjørn and Halldórsson 2002) and it is considered a relatively young academic discipline (Stock 1997). Logistics as a practical social science creates new knowledge of how to do things in a better way (Yrjölä 2003). It is a vital business area and thus logistics research has great managerial and practical relevance. New and Payne (1995) suggested that the process of logistics research is itself socially constituted. Arlbjørn and Halldórsson (2002) argued that logistics research has been heavily intensified since the 1990s and called for building stronger and more solid theories. Stock (1997) proposed ‘borrowing’ theories from other scientific fields to enrich logistics research as logistics does not “have as rich a heritage of theory development and empirical research” (p.515).

New and Payne (1995) pointed out that a major problem in empirical logistics research is the formulation of presumed causal links. They discussed three elements involved in the links: practice, performance and environment. Practice refers to things that a company does; performance is the outcome represented by sales, profitability and share price; environment means the context in which a company operates. Through a case study they concluded that the environment determines practice, which has great impact in performance. Only appropriate practices capable of generating good performance survive. The relationships among the elements are important because they determine the underlying justification of research questions (New and Payne 1995). Figure 6.4 demonstrates how this causal link framework applies to this PhD research.

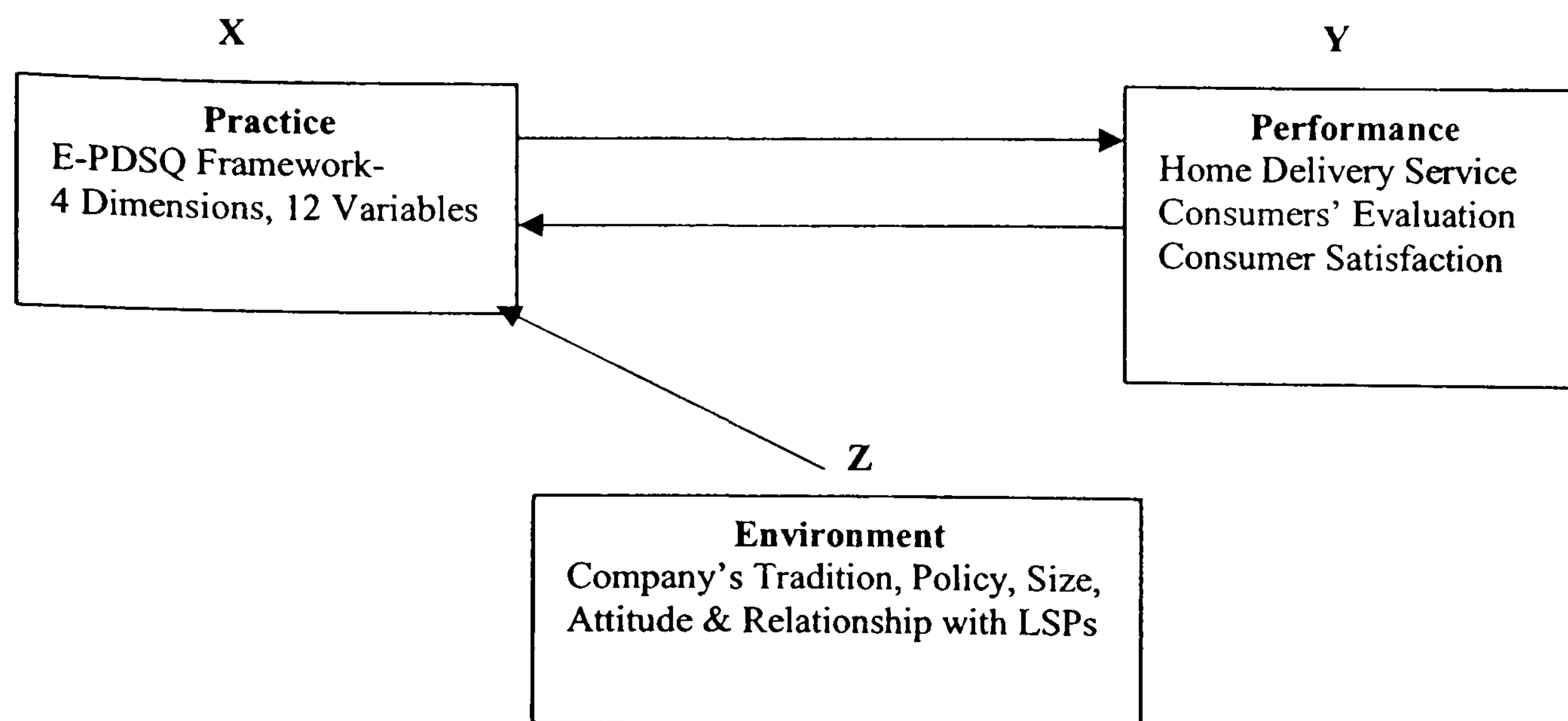


Figure 6.4: The Causal Links of This PhD Research (Z causes X, moderated by Y)

(Adopted from New and Payne 1995)

6.3.2 The Critical Realist Paradigm

The dominant stream of logistics research has been based on a positivistic paradigm (Mentzer and Kahn 1995, Näslund 2002, Kent and Flint 1997). A paradigm is “our world-view, the lenses through which we view the world” (Näslund 2002 p.323), and includes three elements: ontology, epistemology and methodology (Denzin and Lincoln 2000). Ontology is about the nature of reality itself or the assumptions we make about the reality (Näslund 2002, Easterby-Smith et al. 2002). For example, Internet shopping has been growing at an exponential rate during the past five years and we assume that different e-retailers provide different level of services. Epistemology deals with how one perceives the world and the relationship between the researcher and what is known. Researchers make a general set of assumptions about the best ways of inquiring into the nature of the world. For example, the author decides that the best approach to investigate home delivery service is to adopt Internet consumers’ perspective as consumers are direct beneficiaries of good services and victims of bad ones. Methodology, influenced by epistemology and ontology, deals with how the researcher gains the knowledge of the world. It is a combination of techniques used to enquire into a specific situation. For example, consumer survey would be a good technique to find out consumers’ perceptions of home delivery service quality.

Näslund (2002) suggested that the paradigm is the philosophical fundamental basis of research and it is important to know both the limitations and potential of different forms of research. According to Mentzer and Kahn (1995), logistics has economic and behavioral orientations that have their foundation in the scientific approach of positivism. Auguste Comte (1853), the French philosopher, was the first person to encapsulate the positivist view. He said that there was no real knowledge that was not based on observed facts. The key idea of positivism is that researchers are detached from the external reality; the properties of reality can “only be measured through objective measures, rather than being inferred subjectively through sensation, reflection or intuition” (Easterby-Smith et al. 2002 p.28). Positivism is known as being rigorous and reliable as the researcher and the research and object are independent of each other. Positivism deals more with the phenomenon that is known better (Denzin and Lincoln 2000).

Despite of the remarkably dominant positivist approach, there have been some arguments for bringing other paradigms into logistics research. Mangan et al. (2004 p.565) suggested that the trend in management research is to “use methods and approaches which provide a middle ground between the contrasting positivist and phenomenological paradigms and perspectives”. Arlbjørn and Halldórsson (2002) thought that logistics researchers should not hold the unilateral view that logistics knowledge is based on positivism alone and thus focus on objective and observable phenomenon only. Mears-Yong and Jackson (1997) argued that the outcome of logistics research could be improved if other paradigms are considered.

Two other major paradigms are social constructionism and critical realism or post-positivism. Social constructionism (also called phenomenology), as opposed to positivism, believes that “reality is determined by people rather than by objective and external factors” (Easterby-Smith et al. 2002 p.30). The focus of constructionism is on what people feel and think, rather than collection of the facts. Ideas and theories are induced from rich data gathered. Constructionism deals with little known phenomenon and exploratory research.

Critical realism “makes a conscious compromise between the extreme positions” (Easterby-Smith et al. 2002 p.33). It admits that the world is imperfect and should be observed in a modified approach. “It recognizes social conditions as having real consequences whether or not they are observed and labeled by social scientists; but it also recognizes that concepts are human constructions” (Easterby-Smith et al. 2002 p.33). It acknowledges that “management researchers cannot directly know reality but they can study the world ‘as if’ they can – the knowledge of reality can be good enough” (Maylor and Blackmon 2005 p.157).

The reason is that human senses do not always accurately represent any external objects, properties, and events. For example, there may be perceptual illusions that prevent people from making perfect judgment that reflects the reality accurately. In short, critical realism refers to any position that maintains that there exists an objectively knowable, mind-independent reality, whilst acknowledging the roles of perception and cognition (Aastrup 2003, Archer et al. 1998). This position claims the existence of reality while emphasizing the relativity of our knowledge of it (Bhaskar 1975, 1979).

Another term to describe this paradigm is ‘post-positivism’ (Denzin and Lincoln 2000). Table 6.1 summarizes the characteristics of these three paradigms from the perspectives of ontology, epistemology and methodology.

	Positivism	Critical Realism	Constructionism
Ontology	<i>Realist (realism).</i> Reality exists out there and is driven by immutable, natural laws and mechanisms. Knowledge of these entities, laws and mechanisms is conventionally summarized in the form of time and context-free generalizations. Some of these generalizations take the form of cause effect laws.	<i>Critical realist.</i> Reality exists, but can never be fully apprehended. It is driven by natural laws that can only be incompletely understood.	<i>Relativist (Nominalism).</i> Realities exist in the form of multiple, mental constructions, socially and experientially based, local and specific, depending on their form, content and the persons who hold them.
Epistemology	<i>Dualist/objectivist.</i> It is both possible and essential for the inquirer to adopt a distant, non-interactive posture. Values and other biasing and confounding factors are thereby automatically excluded from influencing the outcomes.	<i>Modified objectivist.</i> Objectivity remains a regulatory ideal, but it can only be approximated, with special emphasis placed on external guardians such as the critical tradition and the critical community.	<i>Subjectivist.</i> The inquirer and the inquired are fused into a single (monistic) entity. Findings are literally the outcome of the process of interaction between the two.
Methodology	<i>Experimental / manipulative.</i> Questions and/or hypotheses are stated in advance in propositional form and subjected to empirical tests (falsification) under carefully controlled conditions.	<i>Modified experimental / manipulative</i> Emphasize critical multiplism. Redress imbalances by doing inquiry in more natural settings, using more qualitative methods, depending on more grounded theory, and reintroducing discovery into the inquiry process.	<i>Hermeneutic, dialectic.</i> Individual constructions are elicited and refined hermeneutically, and compared and contrasted dialectically, with the aim of generating one or a few construction(s) on which there is substantial consensus.

Table 6.1: Ontology, Epistemology and Methodology

(Source: Guba 1990 p.20)

This PhD study is conducted in a B2C e-commerce context, which is a phenomenon that is getting much attention but still not very well known. Although Internet retailing sales are growing at an unprecedented rate, they hardly existed a decade ago. There have been some studies on the home delivery of groceries, but not much in the non-food industrial sectors. The literature review revealed the limited number of studies on e-PDSQ. There is also very little discussion in the literature about the reasons which may be responsible for the service quality differences. So the study will be partly exploratory and partly explanatory.

The design of this PhD study fits well with features of critical-realist paradigm due to its exploratory and explanatory nature. First of all, the ontological assumption of this study is that there are e-PDSQ differences between pure and multi-channel retailers and these differences should be identified. But it is very difficult to comprehensively understand

the reasons behind the phenomenon. The insight into the differences can be best obtained by surveying consumers who purchase from e-retailers. However, consumers are human beings and their perceptions may not reflect the home delivery reality in a completely objective and accurate way. Their perceptions are likely to be context and time specific. There are bound to be biases, values and other confounding factors. The author's epistemological position is that of being objective as she herself is not personally involved in the home delivery operations. But she is not completely detached as at later stage she needs to interpret qualitative data; and when interpreting an exploratory study it is unlikely to be bias and value free.

The challenge of employing critical realist position is to adopt multiple perspectives and methods including surveys and interviews to get the viewpoints and experiences of large samples of individuals. This PhD study conducts questionnaire surveys of consumers and semi-structured or in-depth interviews of retailers and LSPs. Survey, a hallmark of critical realism, belongs to the "interpretation of informant perceptions' research category" (Dunn et al. 1994 p.145). But even so, Easterby-Smith et al. (2002 p.34) argued that "it is only a matter of probability that the views collected will provide an accurate indication of the underlying situation".

6.3.3 Quantitative and Qualitative Approaches

As a researcher's choice of research methods and approaches is often bound up with their paradigmatic preferences, the majority of logistics researchers favour quantitative approach as a result of the dominant positivist position and there is a lack of application of qualitative methodology. Quantitative research has the advantage of being objective, concrete and rigorous. The process is replicable and the data collected normally have good validity. The use of statistical method is reliable thus contributes to theory development and enhanced understanding (Denzin and Lincoln 2000).

However, quantitative research has its limitations. The critique of purely quantitative research has begun since 1950s (Silverman 1993). First of all, to generalize the result sample must be sufficiently large; there are data collection and processing constraints. Secondly, quantitative research has statistical constraints and may not interpret a complicated situation properly. Statistical models have to comply with various

assumptions. Researchers need to include relevant variables and exclude all irrelevant variables which can be difficult in practice. Its explanatory power depends heavily on the specification of the model (Hussel and Hussel 1997).

New and Payne (1995) described how to determine the value of a piece of research. They argued that difficult mathematics and statistical tests may not always be reliable and serve as useful suggestions of good research. Good research should be both rigorous and closely related to real practical problems, especially management research (see Figure 6.5). And this means “a reformulation of operations research into a portfolio of participative and soft problem-solving techniques” (New and Payne 1995 p.62). They also suggested that the logistics world is extremely complicated and the involvement of social and human elements cannot be ignored. Thus they concluded that logistics is a difficult area for relevant empirical research but the expansion in the range of methodologies used can provide the holistic interpretations.

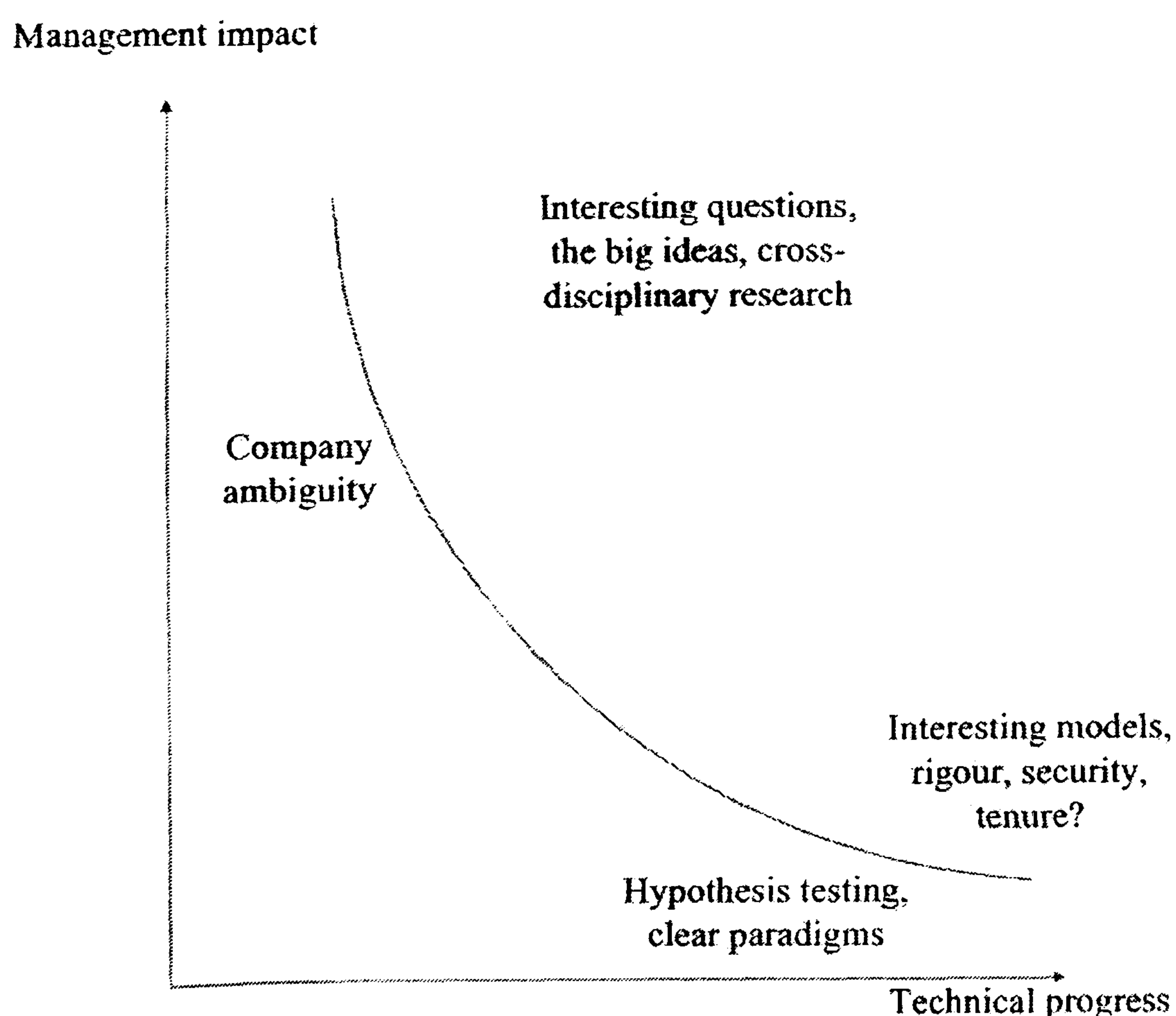


Figure 6.5: Academic Research – Abstract versus Real Issues

(Source: New and Payne 1995 p.62)

In contrast, qualitative research is capable of collecting rich data and making sense of the phenomenon (Näslund 2002). Qualitative methods are ideally suited to research in substantive areas where little is known (Stern 1980). The strengths of the qualitative study are attributed to the fact that the data come directly from the participants involved in the phenomenon (Golicic et al. 2002). But qualitative research has been described as “unscientific, or only exploratory, or entirely personal and full of bias” (Näslund 2002 p.329).

In light of the above discussion, a combination of quantitative and qualitative techniques can overcome the constraints of the employment of a single research method, lend greater empirical support to logistics research and enable researchers to have multidimensional insights into research issues (Mangan et al. 2004). This mixed usage of quantitative and qualitative approach is called ‘triangulation’, i.e. “the process of using multiple perceptions to clarify meaning, verifying the repeatability of an observation or interpretation” (Denzin and Lincoln 2000 p.443). Näslund (2002) also advocated that logistics research should be conducted within a wide methodological domain and the incorporation of qualitative approach is necessary to develop and advance logistics research. He depicted logistics problems as ill-structured, messy and real so modern logistics is based on holistic and systemic thinking.

Post-positivism supports a triangulation approach. The use of combined survey and interview methodologies is a valuable way of extending the explanatory spirit of this research as well as developing its exploratory potential. The next section discusses the research design.

6.4 RESEARCH DESIGN

The research design serves the purpose of facilitating answering the seven research questions. To answer RQ1, RQ2 and part of RQ4, a two-stage method proposed by Churchill (1979) and Dunn et al. (1994) for scale and construct development in marketing and logistics respectively is adopted. The first stage consists of specifying the domain and variables from the literature, conducting a pilot study, and confirming or amending the variables. The second stage consists of conducting a main study to

validate constructs and variables and develop norms. To answer RQ3 part of RQ4, RQ5, RQ6 and RQ7, in-depth interviews are conducted.

6.4.1 The Two-stage Method

In the two-stage method, the empirical studies commence from a pilot questionnaire survey within a carefully selected sample. The postal questionnaire survey is one of the most frequently used methods in logistics research. The main advantages of postal questionnaire survey are concentration of process control and no interviewer bias (Grant et al. 2006). As much as 54.3% of logistics research is conducted through postal questionnaire survey, with computer simulation and interviews the next two mostly used methods (Mentzer and Kahn 1995).

Survey strategy allows the collection of large amount of data about a defined set of population in an efficient way (Kotzab 2005). Questionnaires are the distinctive and extensively used survey instrument. They are very widely used in large scale investigations of consumer preferences and opinions (Easterby-Smith et al. 2002). As it is very time- and resource- intensive to contact everyone in a population, sampling methods are used to construct a subset of the population. The samples are normally representative of the whole population, thus patterns observed in samples are likely to replicate in the population. The sampling method used in this study is random stratified sample: individuals / households are selected at random within the strata that are representative of the whole population. Strata refer to the key features of the population. The details of sampling process will be introduced in the respective data analysis chapters.

The objective of the pilot survey is to validate the variables, improve the framework and prepare for the main study. The questionnaire is designed to test the consumers' views of the importance of the variables listed; their expectation of e-PDSQ; and their overall perceptions of the performance of the two types of e-retailers. Questionnaires are able to provide structured and standardized set of data from which appropriate variables of e-PDSQ, and the associations of the variables should be identified. The variables in the e-PDSQ framework are adjusted by the results of the pilot survey through exploratory

factor analysis (Churchill 1979). Inappropriate ones are eliminated and new variables added if there are any identified by the consumers.

The main study is a major postal questionnaire survey among a large sample of consumers. The e-PDSQ performance of the two types of retailers is tested based on the validated variables of the framework and thus theory is developed.

The questionnaire comprises both questions of fact and questions of opinion (Easterby-Smith et al. 2002). For example, the demographic details and people's online shopping experience are factual. People's perception of the e-PDSQ services are their opinions so there is no right or wrong answers. Most questions are closed questions and people are given multiple options to choose. A few questions are open questions. E.g. people are encouraged to write down the important features of home delivery that are not included in the questionnaire. Closed questions are quick to complete and analyze. Open questions allow deeper exploration of issues but are difficult to complete and analyze (Easterby-Smith et al. 2002). As the e-PDSQ framework has already been developed so it is not necessary to explore deeply. Closed questions are suitable for the explanatory nature of the consumer survey.

6.4.2 Scale Development, Reliability and Validity

Postal questionnaire survey is considered to have high external validity as it is useful to extend the generalization. But its internal validity is relatively low as it is difficult to control (Mentzer and Kahn 1995). Mentzer and Kahn (1995) called for more rigorous logistics research. They argued that logistics discipline was getting into the maturation process and more rigorous data analysis was needed to improve the validity and reliability of research. Table 6.2 shows the definitions of three rigorous terms used to evaluate research.

Internal validity	Whether or not what has been identified as the cause actually produces the effect.
External validity	The extent to which the research findings can be extrapolated beyond the immediate research sample.
Reliability	The consistency of results obtained in research. Whether another researcher could replicate the original research or the same researcher could replicate the original research at a different time.

Table 6.2: Evaluate Research

(Source: Johnson and Duberley 2000 p.46)

An important concept in this thesis is measurement scales, i.e., measuring consumers' attitudes, expectations and perceptions in the home delivery market. Measurement was defined as rules for assigning objects to: "represent quantities of attributes numerically (scaling) or define whether the objects fall in the same or different categories with respect to a given attribute (classification)" (Nunnally and Bernstein 1994 p.3).

One rating scale to measure attitudes was developed by Likert (1932) and named after him. Likert scale is the most widely used scale in survey research. It presents a set of attitude statements on a five-point scale. Respondents specify their level of agreement or disagreement to a statement using a numerical value from one to five. Thus a total numerical value can be calculated from all the responses. This five-point Likert scale is used in the consumer survey to find out what consumers expect from e-retailers and how they feel of the home delivery service against the e-PDSQ framework. This scale is supposed to have good reliability and validity (Spector 1992, Grant 2003).

6.4.3 Interviews

The next step is to conduct in-depth interviews with e-retailers and LSPs focusing on exploring the possible factors that may cause the differences identified from the main survey. Retailers' provision of service may be related to factors such as organisational structure, LSPs they collaborate with and the product category they handle etc. But the degree of impact of these factors on e-PDSQ is unclear and there may be other factors. In this sense, in-depth interviews can yield rich information.

In-depth interview is the most fundamental of all qualitative methods (Easterby-Smith et al. 2002). An in-depth interview is an open-ended, discovery-oriented method that is

well suited for describing both processes and outcomes from the perspective of the interviewee (Guion 2006). In-depth interviews are normally very flexible in the way questions are asked (Maylor and Blackmon 2005). Although questions were pre-planned, they are allowed to flow naturally, based on information provided by the respondent. Questions may not necessarily be asked and answered in a specific order. Interviewees will be encouraged to express their views and perceptions freely. The flow of conversation ensures that as much information is explored as possible.

The interview sampling process focuses on well-known retailers (representative of either multi-channel or pure players); LSPs, e-fulfilment companies and carriers who are actively involved in the home delivery market; and industry bodies concerned. Interviewees chosen from these companies are home delivery experts and should provide insights into their operations and the current home delivery market.

The data analysis focuses on key issues and looks for themes, commonalities, and patterns to try to make sense of the information (Guion 2006). ‘Content analysis’ is used to examine the qualitative data from the interview. Content analysis has been defined as a systematic, replicable technique for compressing many words of text into fewer content categories based on explicit rules of coding (Stemler 2001). Content analysis is good for coding the data and identifying common themes (Denzin and Lincoln 2000). The assumption made is that the words mentioned most often are the words that reflect the greatest concerns (Stemler 2001). It is objective and aiming for clarity and unity (Easterby-Smith et al. 2002). Content analysis enables researchers to sift through large volumes of data with relative ease in a systematic fashion and it is useful for examining trends and patterns in documents (Stemler 2001). Using this method, important patterns in the home delivery operations can be observed. Factors contributing to difference in e-PDSQ of the two types of retailers can be identified.

6.5 THE LIMITATIONS OF THE METHODOLOGY

6.5.1 Sampling Error

Sampling error refers to the differences between the sample selected and the whole population (Maylor and Blackmon 2005), which is “a threat to generalisability” (p.198).

Most surveys are unlikely to be sampling error free so accurate sampling method is important to minimize it. This study uses good sampling frame for the survey and interviews so samples selected in this study are considered to be representative of the population. It is possible though not all the social units are included and certain members of the population may be either over- or under-sampled.

6.5.2 Non-response Bias

If some people refuse to participate in the survey, the research findings may be biased towards respondents and away from non-respondents, which may result in non-response bias (Maylor and Blackmon 2005). Non-response or poor response may skew the research sample away from the design and create problems. This study has good response rates (as will be introduced in Chapter Seven) so does not have low response rate problems.

Demographic characteristics of non-respondents have been investigated and most studies have found that non-response is associated with low education (Statpac 2006). As low education is considered not to be strongly associated with online shopping. Chapter Seven will discuss how the non-response bias is tested.

6.6 CONCLUSION

This chapter discussed the theoretical foundation and methods employed by this research. Critical realist paradigm suits its explanatory and exploratory nature well. A combination of quantitative and qualitative methods not only provides multiple insights into the research but also ensures the managerial practical relevance of it. The research is designed to find out answers to research questions, reflect real world information and maximize the practical implication of this management research. The next chapter will introduce the two-stage consumer surveys.

CHAPTER SEVEN: CONSUMER SURVEY - THE DEMAND SIDE

7.1 INTRODUCTION

This chapter discusses the consumer surveys, including both the pilot and main surveys with the two-stage Churchill methodology (Churchill 1979). The data collection method, including sample selection and instrument details, the survey process and responses are described. The pilot survey validated the e-PDSQ framework and the results are briefly presented. The main study was conducted based on the improved framework and the results were elaborated. The demand side of empirical studies answered the part of the first research question, the second and part of the fourth research question.

7.2 PILOT SURVEY - DATA COLLECTION METHOD

7.2.1 Sample Selection and Instrument Details

The pilot survey was designed to test the questionnaire and calculate a possible response rate for the main study. Some academic research suffers from poor response rates (Grant et al. 2004, Sterling and Lambert 1987) and it was estimated that the response rate for this survey would probably be around ten per cent. A hundred responses would be sufficient for meaningful statistical analysis (Field 2000), based on which the sample size was set to be a thousand. Edinburgh was chosen to be the location of the survey for two reasons. Firstly, Edinburgh is one of the cities leading the way in terms of online shopping (Ferne and McKinnon 2003); other leading cities include London and the SE of England, Aberdeen and Bristol. Edinburgh has a very high Internet penetration rate and it has a culture of Internet shopping. Secondly, it was easier to obtain detailed household names and addresses for the survey from Edinburgh council than from other city councils. It was more convenient to contact local council for the research purpose.

Online shopping was considered more likely to happen in relatively high-income households (Shiu and Dawson 2004, Yrjola 2003). Thus the Edinburgh deprivation

index was used to identify the high-income areas, which probably had higher Internet coverage (Carstairs and Morris 1991). Although targeting wealthy areas may lead to certain bias, the purpose of the pilot survey was to validate variables so getting as many responses as possible was the priority. Deprivation indices rank small geographical areas along a univariate dimension by using aggregated information about the individuals living in these areas expressed as a proportion of individuals with one or other attribute. They provide a relative measure of deprivation or affluence (McLoone 2004). DEPCAT (short for deprivation category), ranges from DEPCAT 1 (the most affluent postcode sectors) to 7 (the most deprived). Due to the scale of the pilot survey, it was impossible to cover all the high-income areas in Edinburgh. The stratified probability sampling method was used to ensure that the key sections of the population of interest would be adequately represented (McCormack and Hill 1997). Then the Colinton and Currie area were selected as sample areas since they are relatively high-income areas.

Mail has a better chance to be opened and read if it is addressed to people personally (McCormack and Hill 1997), thus the electoral registration office in Edinburgh was contacted to obtain detailed household names and addresses. The electoral office supplied a thousand households information in Colinton area and a thousand in Currie each, randomly selected from their database. Then a total of a thousand households in Colinton and Currie areas with postcodes of EH14 5, EH14 6 and EH13 0 were randomly selected out of the two thousand households, five hundred for each area. These postcodes were checked against the deprivation index and their deprivation categories were 1 or 2, indicating that they were generally high-income areas.

Each survey package included a covering letter, a copy of the questionnaire and a stamped business return envelope addressed to the author. The covering letter was personal and professional, explaining the purpose of the survey, encouraging people to participate, assuring the confidentiality and noting the deadline and contact person. It was also promised that the survey result would be put on the university web site. The covering letter was designed to be user-friendly and approachable (see Appendix One). The self-addressed, prepaid return envelope was used as an incentive for people to respond.

The questionnaire was printed out in A3 format, double sided and folded (See Appendix Two). It consisted of three sections. Most questions were closed as the answers were factual and fairly predictable (Gillham 2000). There were a few open questions where the answers were in terms of opinions, beliefs or judgments, or for clarification reasons. Section 1 was supposed to find out people's perception of the importance of home delivery service. Respondents were firstly asked whether they had done any Internet shopping before and the first two major reasons to do so. Then twelve variables were listed and people were asked to rank whether these variables were important by using a 5 point Likert scale (Likert 1932, Hair et al. 1995) from 'unimportant' (1) to 'very important' (5). Even respondents who had not done Internet shopping before could still fill in this part as they could give their expectations of the service features. Respondents were also asked to rank the top five most important variables in order to find out how important the variables were for them. Respondents were given the space to write down any other home delivery features not included in the twelve variables that they considered important. This section provided information of what variables of home delivery were considered to be important (RQ1). At the end of Section 1, instructions were given so that people without non-food product online shopping experience should go to Section 3.

People with non-food product online shopping experience were invited to fill in Section 2, which was designed to find out people's perception of Internet retailers' home delivery service. They were asked to specify the product type of their most recent non-food online purchase and the retailer from whom they bought it. Once an e-retailer's name was provided, it would be very easy to identify whether it was multi-channel retailer or pure player. For example, familiar high-street names such as John Lewis belong to multi-channel retailers. Amazon on the other hand, is an obvious example of a pure player. For the less well-known retailers, the author could look into their web sites or use the Internet searching tools to decide their types. The questions followed were a few transitional questions related to the delivery time, delivery charge and return regarding to their latest online purchase. Then the respondents were asked to rank the retailer's performance of the twelve variables and the overall standard of service. They could leave blank for any service features that they did not receive, e.g. return variables.

The next part of Section 2 explored the issue of unattended delivery. People were asked whether there was normally someone at home to receive the delivery, their preference of delivery time, whether they preferred evening or weekend delivery and how much they were willing to pay for non-working day time delivery. Then they were asked to choose their favourite place for unattended delivery other than home. People's online shopping habits were also examined. They were asked how often they made Internet shopping of goods of the main product categories. And they were asked to list up to five Internet retailers and their overall rating of the retailer's standard of service. The reason for this was to cover as many retailers as possible to get a large database of retailers' performance. This would provide some initial data as to which type of retailer was considered to have better home delivery performance (RQ2).

Section 3 dealt with demographic information. Respondents were asked to indicate their gender, age, occupation, level of education, the number of people living in the household and the annual household income. These questions were very important as they gave information in terms of who the consumers are and what their online shopping trends are. The last question asked people how often they shopped from a catalogue. There are some similarities between catalogue home delivery and Internet home delivery, and most catalogue companies have online channel now. Therefore this question helped to find out whether people's catalogue shopping behaviour and experience may influence their perception of online shopping.

7.2.2 Survey Process and Response

The preparation for the pilot survey started in September 2004. Before the questionnaire was sent out, it was tested among a handful of people, who are either academic staff or company professionals. The questionnaire was tested for language, format, structure and logic. Then the first five hundred questionnaires were sent to the Colinton area in early November and respondents were given two weeks to return them. Half of the questionnaires were hand delivered and another half went out through second-class post due to time limitations and geographical spread of households. The second five hundred questionnaires were sent by second-class post to the Currie area in late November and the deadline was also two weeks. Both times were considered to be appropriate for

surveys as they were before the busy Christmas period and respondents may have used online shopping for Christmas gifts. Christmas is normally a peak time for online shopping and it was hoped that the choice of the time would attract more responses. A retailer's ability to handle peaks is of central importance for its online business. During the holiday season, consumers tend to be highly sensitive about service quality and retailers need to rely on good PDSQ to attract consumers (Consumer Direct Logistics 2001). Thus data collection during Christmas time supports the validity of online shopping research (Rabinovich and Bailey 2004). A report showed that half of the UK population was shopping online during Christmas 2004, representing 6.8% of all UK retail sales (IMRG 2005).

The first mail-out yielded 84 responses from Colinton. The first response came 3 days after the drop date and the last one 20 days later. The second mail-out yielded 79 responses from Currie. The first response came 4 days after the mail-out date and the last one arrived after the New Year, 36 days after the mail-out date. Figure 7.1 shows the response patterns for the two areas. The patterns look different in the initial stage perhaps it is because questionnaires were sent out on different days of the week, which may have affected people's response.

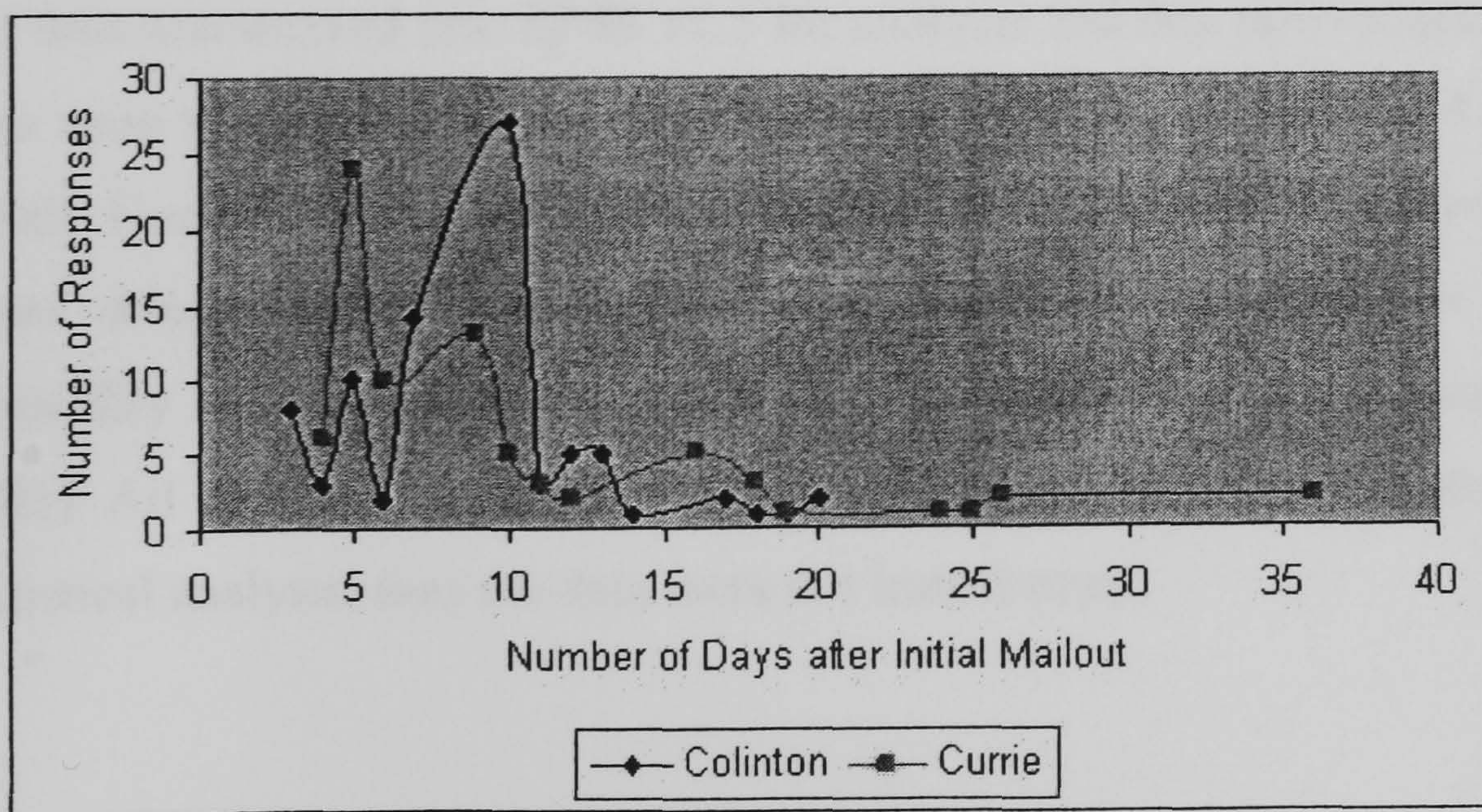


Figure 7.1: Mailout Response Pattern for Colinton and Currie

Of the total 163 responses, 10 questionnaires were returned empty from Colinton and 16 from Currie. Some people attached a note or letter to explain why they did not fill in the questionnaire. The following statements are typical. 'Not interested in Internet shopping

at all'. 'Do not have a computer'. 'I am a pensioner and I am afraid that I can't help'. 'The person no longer lives here'.

There were 137 usable questionnaires altogether, although some of them were not completely filled out. One reason is that people who did not have online shopping experience could only fill in Section 1 and 3. These details will be discussed in data analysis below. Table 7.1 shows the response details of the survey. The overall usable response rate is 13.7% which is in line with expectations.

Area	Total Responses	Response Rate	Empty Responses	Usable Response Rate
Colinton	84	16.8%	10	14.6%
Currie	79	15.6%	16	12.6%
Total Survey	163	16.2%	26	13.7%

Table 7.1: Survey Response Details

7.3 PILOT SURVEY - DATA ANALYSIS

7.3.1 Respondents' Demographic Data

All data was entered into SPSS 11.5 for analysis and descriptive statistics regarding the data were analysed. The data were first examined for normality and survey bias (Field 2000). Normal (Q-Q) probability plots were generated for the twelve online shopping home delivery variables. Figure 7.2 shows the probability plot for the variable. Normality is indicated if response plots are clustered around the straight line (Norusis 1993). All normal probability plots were examined and the data considered normal for statistical analysis, thus the data were not transformed.

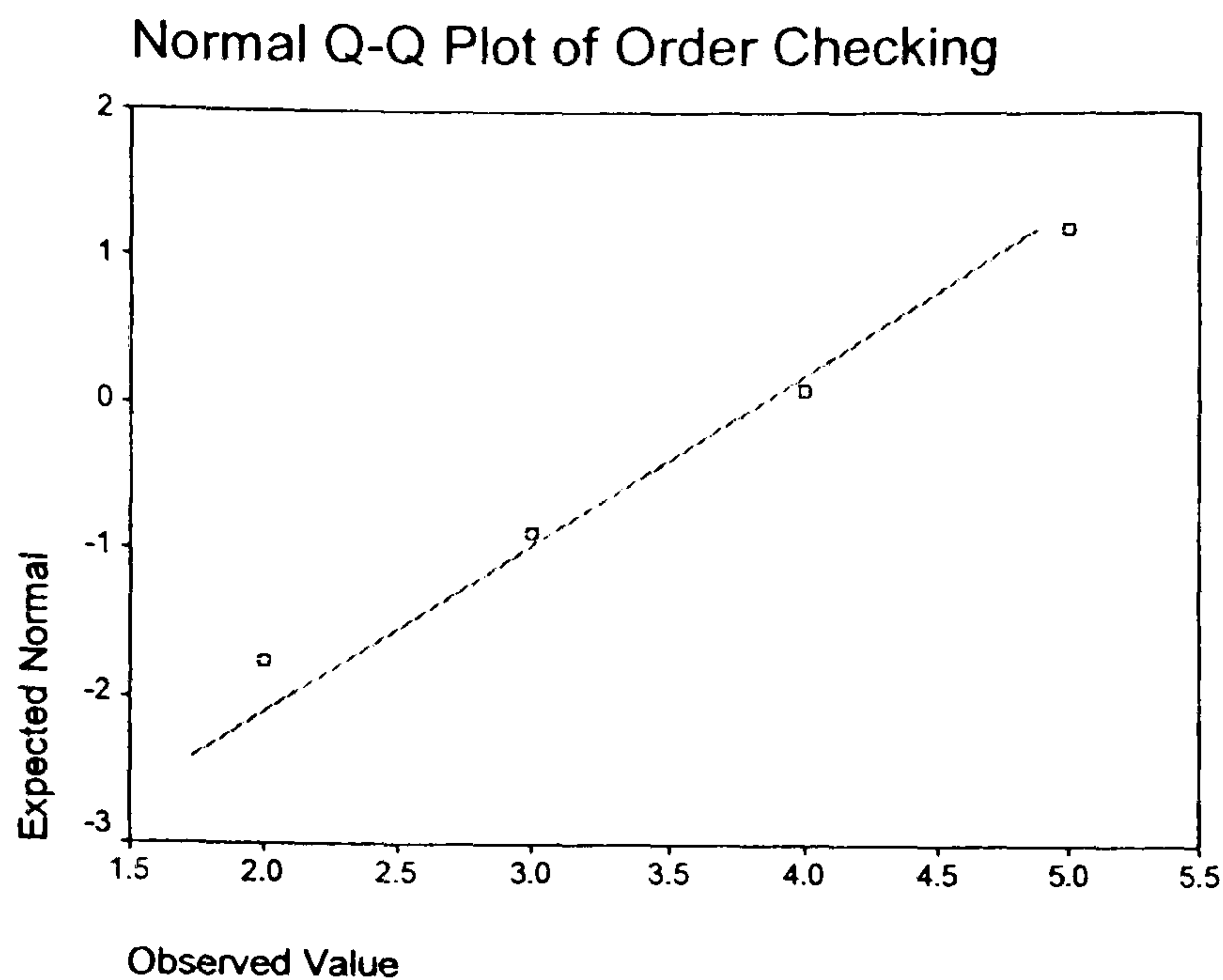


Figure 7.2: Normal Probability Plot

Respondents were split into first (early) and last (late) quartiles according to when their responses were received to compare differences in responses and test non-response bias (Lambert and Harrington 1990). The first quartile of respondents included the first fifteen respondents from Colinton and the first fifteen respondents from Currie. The last quartile of respondents contained the last fifteen respondents from Colinton and the last fifteen respondents from Currie.

A t-test was then applied to the 12 e-PDSQ expectation variables and results are shown in Table 7.2. The t-test proposes the null hypothesis that a difference in means is zero for a normal distribution. The null hypothesis of a zero difference in means between groups cannot be rejected if the magnitude of a t-test value does not exceed 1.96 at the 5% significance level and has significant two-tailed probabilities (Mentzer et al. 1999).

Variable	1st Quart Mean	2nd Quart Mean	t-test	Sig (2-tail)
Availability confirmation	4.53	4.71	-.771	0.45
Alternative offer	3.44	4.17	-1.68	0.12
Specify delivery date	4.29	4.10	.566	0.58
Order checking	3.93	4.05	-.282	0.78
Delivery on the first date	4.15	4.41	-.735	0.47
Delivery in time slot	4.00	3.33	1.55	0.14
Order accuracy	4.76	4.87	-.63	0.53
Order condition	4.63	4.96	-2.06	0.054
Order completeness	4.18	4.76	-1.37	0.19
Easy return	3.60	3.71	-0.23	0.82
Prompt collection of return	3.00	3.00	0	1.00
Prompt replacement of return	3.67	3.67	0	1.00

Table 7.2: Non-response Bias Test

Absolute t-test values were less than 1.96 at the 5% significance level for all the variables except order condition which means that there was statistically significant differences in means for one variable only. Thus responses from first quartile (early) and last quartile (late) respondents were very similar and non-response bias was small.

Both geographical areas had slightly more male respondents than female. Of all the 137 usable responses, 108 people, or 79% had online shopping experience. Forty-five percent of male respondents had online shopping experience, while only 34% of female respondents did so (See Table 7.3).

Online Shopping Experience	Gender		Total
	Male	Female	
Yes	62 (45.3%)	46 (33.6%)	108 (78.9%)
No	14 (10.2)	15 (10.9%)	29(21.1%)
Total	76 (55.5%)	61 (44.5%)	100.0%

Table 7.3: Shopping Experience * Gender Crosstabulation

Regarding age 38.7% of respondents belonged to the 40-54 age group, and 22.6% represented the 55-65 group. The 25-39 and over 65 group each accounted for 18.2% of the whole respondents. Figure 7.3 shows the relationships between the age and online

shopping experience. The 40-54 age group accounted for the highest percentage in online shopping experience, i.e. 45%, followed by the 25-39 and 55-65 age group.

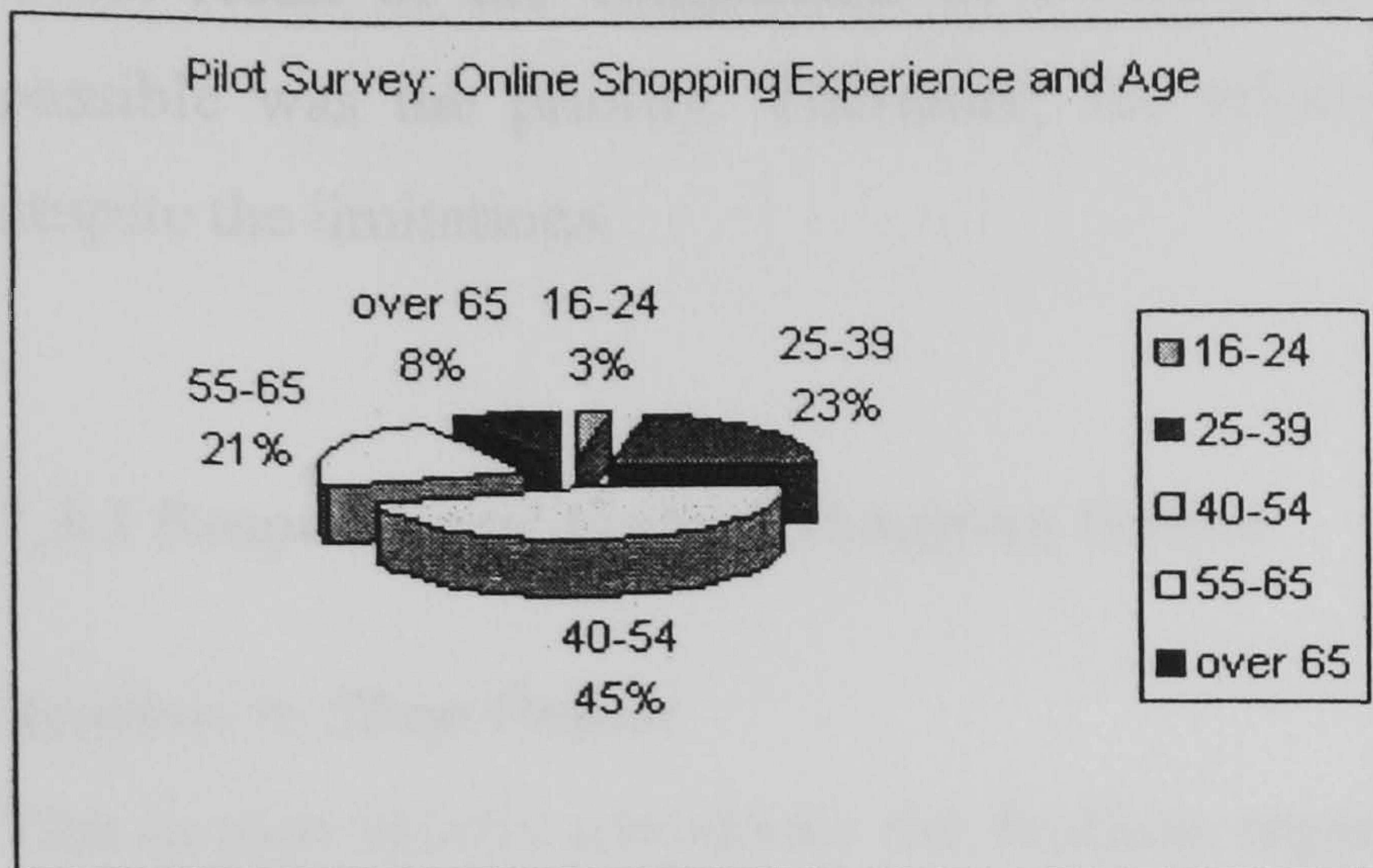


Figure 7.3: The Relationship between Age and Online shopping Experience

Regarding education, the higher an education people have the more likely that they had experienced online shopping. For example, only 1 out of 21 of people who had a postgraduate degree and 6 out of 43 people who had a degree had not shopped online before. In contrast, about half of those with a secondary school education and one third of those with an HNC education had not shopped online.

Sixty-three percent of respondents who shopped online were professionals or senior managers, followed by retired people (15%), and people with clerical or secretarial jobs (14%). Cross-tabulation shows that households with more residents were more likely to do online shopping. All households with 5 or more residents (n=12) had online shopping experience. Cross-tabulations, which examine the relationship between two or more categorical variables by producing two-way or multiway tables are useful techniques to see how the variables are associated.

The data also shows that people with higher income were far more likely to have online shopping experience. Only 1 out of the 43 people with annual income over £50,000 had not shopped online. Of all the people who had online experience, 40% had annual income over £50,000; 41% with income between £30,000 to 49,999; 17% with £10,000 to 29,999.

The above demographic information of online shoppers are indicative of trends but can

not be generalized to the whole population as two high-income areas were targeted. However, the main purpose of this pilot survey was to validate variables and obtain an initial result of the comparison of e-PDSQ, and to achieve as many responses as possible was the priority. Therefore, the selection of the sample could be justified despite the limitations.

7.3.2 Respondents' Online Shopping Habits

Reasons to Shop Online

This section briefly introduces the findings regarding to respondents' online shopping habits. When asked to list the most two important reasons of shopping online, almost half of respondents considered convenience (44.3%) as the most important one, followed by low price (20.8%) and product range (11.3%). Availability (4.7%), no time constraints (4.7%), speed of delivery (4.7%), ease of use (3.8%) and comparison of price (1.9%) were also regarded as important. Other reasons mentioned included cost of obtaining, time saving, bulky product, environmental impact, young children to look after and urgent requirements. Figure 7.4 lists the frequency of most important reasons of shopping online. Table 7.4 gives detailed summaries of comments of the reasons by most people. These are interpretations given by the respondents.

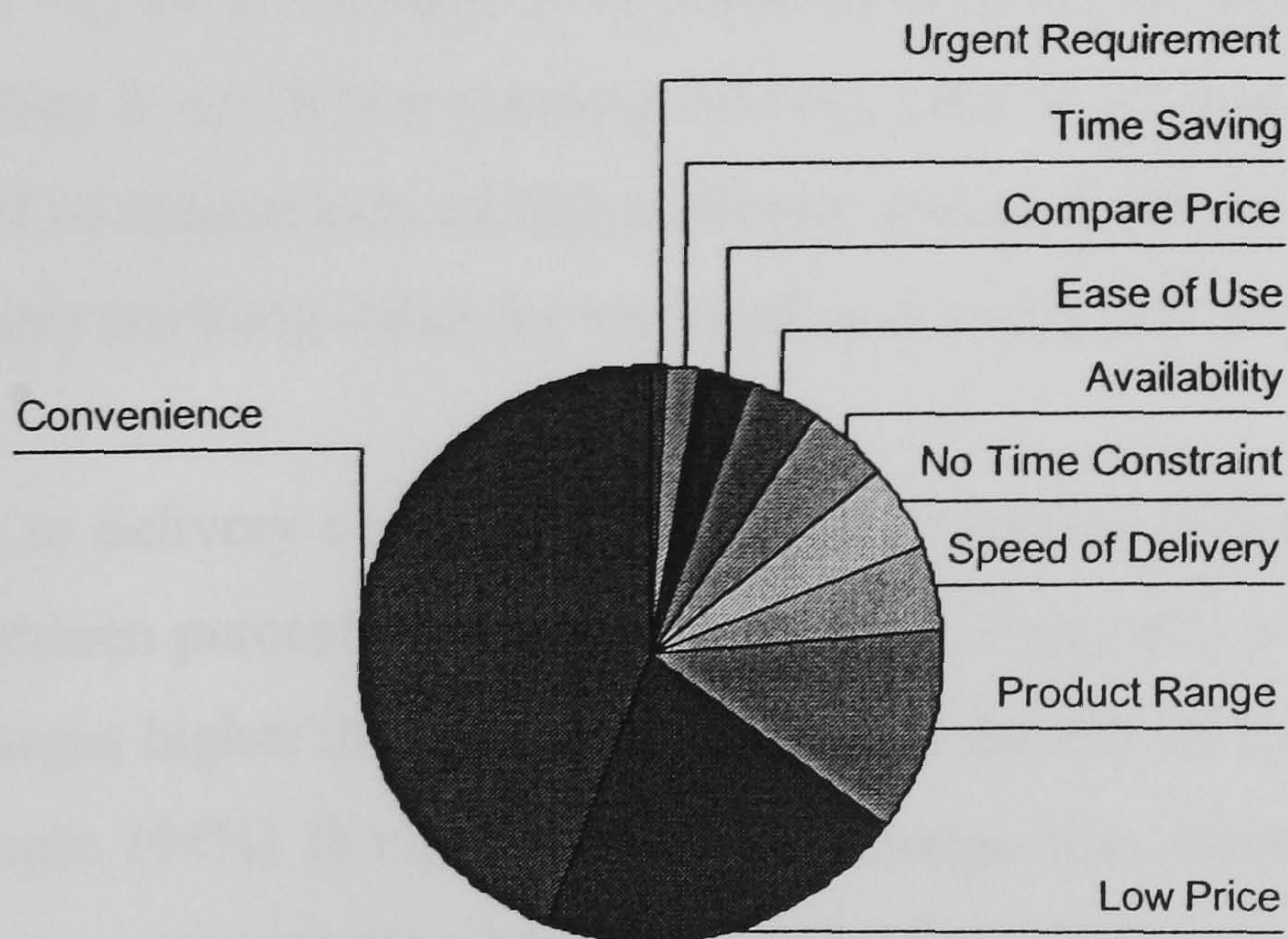


Figure 7.4: Most Important Reason for Online Shopping

Reasons	Interpretations
Convenience	No need to go to the town or visit high street; avoid traffic and save parking
Low Price	Goods bought online are cheaper than from conventional channel
Product Range	Access to wider choice of suppliers; more varieties
Availability	Buying Goods not available locally or in most shops
Ease of Use	Ease and quickest of making purchase at the touch of a button
Speed of Delivery	Have products delivered to the door quickly and no sore feet in shopping around
No Time Constraints	Not linked to shopping hours; can browse and buy at any time; 24-7 access
Compare Price and Search	Compare prices and search for the cheapest; viewing product information
Cost of Obtaining	Save postage on goods and especially gifts
Time Saving	No traveling and car parking
Bulky Product	Bulky or special items; size
Environmental Impact	Not driving to shops so less environmental impact
Small Children to Look After	Purchase gets delivered to the door so more time to look after children
Urgent Requirement	Internet helps in case of urgent requirements

Table 7.4: Respondents' Interpretation of Reasons

Unattended Delivery, Delivery Time and Delivery Charge

More than half the respondents (51%) said that there was normally no one at home during the day to receive a delivery. And two thirds of these people said they would not take time off work to stay at home for the delivery. Neighbours turned out to be the most popular alternative delivery choice, followed by a local pick-up point and work place.

When asked about delivery time, 27% of respondents preferred morning delivery, i.e. 8 am –12 noon. Another 27% preferred delivery by arrangement. Early morning delivery before 8 am or late evening delivery after 6 pm were also popular options. Less than half of respondents (43%) preferred weekend delivery and most people were reluctant to pay anything either for weekend or evening delivery.

As to delivery charge, half of the 92 purchases mentioned were offered free delivery. Fourteen percent of the purchases cost 1-2 pounds and 28% cost 3-4 pounds. Delivery charges higher than 7 pounds accounted for 8% of the total purchases. The majority of people (94%) thought the delivery charge was value for money, which showed that most consumers were happy to pay for home delivery.

Product Category

Figure 7.5 shows the frequency of products purchased on the Internet by respondents. Books and CDs were the most frequently purchased products, followed by computer

products, electronic products and photographic products. People were also buying clothes, toys, sports products and houseware online, though at a lower frequency. The least online purchased product category was furniture.

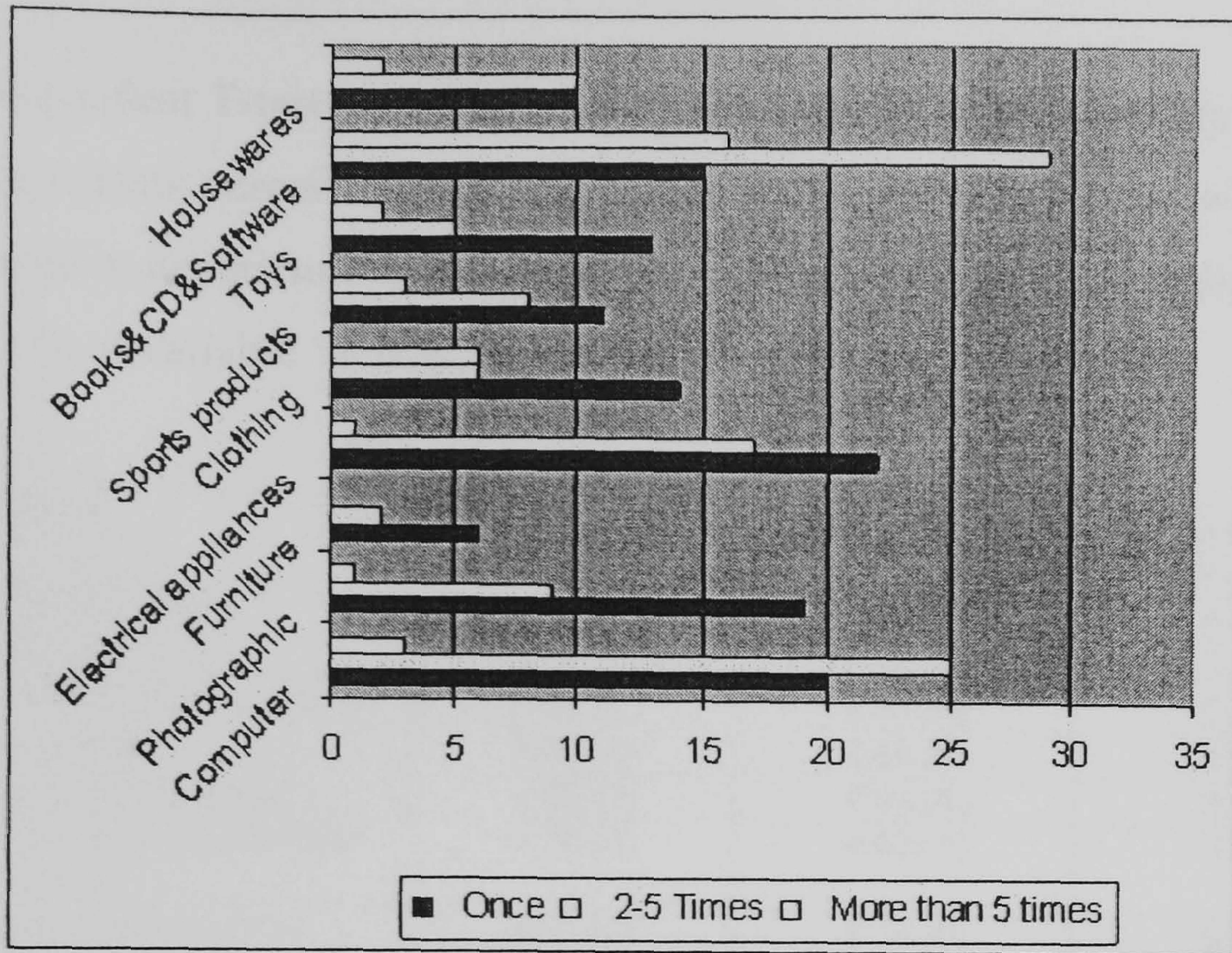


Figure 7.5: Frequency of Purchase of Different Product Categories

7.3.3 E-PDSQ Variables Importance

Respondents were asked to indicate how much importance they would attach to different aspects of the service provided by retailers. For respondents' convenience, the variables were split into three parts related to the different stages of the e-commerce transaction (See Table 7.5).

<i>At the time of placing an order</i>	Order availability confirmation, alternative offer, specify delivery date, order checking
<i>At the time when an order is delivered</i>	Deliver on the first date arranged, deliver in time slot, order accuracy, order condition, order completeness
<i>At the time of returning a product or order if it is faulty, damaged or you do not want it</i>	Easy return, prompt collection of returned product, prompt replacement of returned product

Table 7.5: Different Stages of E-commerce Transaction in the Questionnaire

Table 7.6 shows the mean of the importance of each variable in descending order. 'Order undamaged' and 'order accuracy' have the highest means. All respondents (n=134) considered them either 'very important' or 'important'. The ranges and

standard deviations for the other ten variables are much bigger, which means respondents' opinions varied significantly. 'Order checking' and 'alternative offer' were considered to be the least important variables.

Independent T-test was conducted to see whether there were any differences in the way respondents perceived the importance of the twelve variables whether they had online shopping experience or not. The test showed that significant difference existed in the means of variable 'deliver on the first date arranged' at $p=.000$.

Variables	Online Experience YES (n=106)	Online Experience No (n=28)	Standard Deviation (n=134)	Total (n=134)
Order Condition	4.93 (1)	4.89 (1)	0.264	4.93 (1)
Order Accuracy	4.89 (2)	4.86 (2)	0.325	4.88 (2)
Availability Confirmation	4.55 (3)	4.57 (6)	0.742	4.55 (3)
Easy Return	4.46 (4)	4.68 (4)	0.646	4.51 (4)
Prompt Replacement	4.46 (4)	4.61 (5)	0.669	4.49 (5)
Deliver on the First Date Arranged	4.38 (6)	4.82 (3)	0.792	4.47 (6)
Specify Delivery Date	4.28 (7)	4.54 (8)	0.813	4.34 (7)
Prompt Collection	4.17 (9)	4.57 (6)	0.763	4.25 (8)
Deliver in Time Slot	4.20 (8)	4.43 (9)	0.896	4.25 (9)
Order Completeness	3.92 (10)	4.32 (10)	0.918	4.00 (10)
Order Checking	3.92 (10)	3.54 (11)	0.869	3.84 (11)
Alternative Offer	2.73 (12)	3.29 (12)	1.162	2.84 (12)

Table 7.6: Differences of Variables Means and Rankings

While Table 7.6 shows how important these variables are, respondents were also asked to rank the five most important variables; they are availability confirmation, order accuracy, order condition, specify delivery date and delivery on the first date arranged (n=134). Table 7.7 shows which dimension the five most important variables belong to. No variable in the 'return' dimension was included in the top five most important variables.

Dimensions	Variables
Timeliness	Choice of delivery date (4 th) and delivery time window; Delivery on the first date arranged (5 th) and within a specified time slot
Availability	Confirmation of availability(1 st); Substitution offer; Order tracking and tracing system
Condition	Order accuracy (2 nd); order completeness; Order condition(3 rd)
Return	Return channels options; promptness of collection; promptness of replacement

Table 7.7: e-PDSQ Framework Dimensions

When asked whether there were other home delivery features that were important, 42 respondents gave their views. Some respondents listed non-home delivery related aspects of online shopping, such as security of payment; efficiency and user-friendliness of website; ability to cancel or change order; full details and photos of goods on sale; precise, honest, truthful descriptions of goods; price comparison function etc.

The home delivery related features mentioned by respondents mainly related to delivery time and unattended delivery, most of which had already been covered in the questionnaire (summarized in Table 7.8). The summary highlights people's concerns of delivery time window, waiting time and quick delivery, which reflect the fact that not many companies were capable of offering a short order lead time and time window. The unattended delivery features show people's desire for security and flexibility. They want to have multiple choices and be informed. Retailers should cater to consumers' need and develop practical solutions, including strengthening security and providing alternative delivery choices. Some of these variables mentioned by respondents were not included in the e-PDSQ framework and should be considered to be added into the framework in the main survey.

Delivery Time	Specify the delivery time window if it is a bulky item;
	Phone calls to inform goods shall be delivered 20-40 minutes prior to delivery;
	Short waiting time for delivery and out of stock products;
Unattended Delivery	Option to leave instructions for delivery, e.g. leave with neighbour;
	Different delivery address than card holder or home address, e.g. work address;
	Make sure goods is left with a responsible person;
	Confirm that delivery has taken place if it is left with 3 rd party;
Others	Products should be correctly packaged for post;
	Rapid dispatch after payment;
	Free delivery.

Table 7.8: Other Features of Home Delivery

7.3.4 E-PDSQ Variables Performance

In total, 132 different retailer names were mentioned in the response. As there was no official classification of Internet retailers, they could be divided into pure players and multi-channel retailers. Descriptive analysis showed that pure players enjoyed a much

higher overall service quality with a mean of 4.56 (n=117), while multi-channel retailers' overall performance averaged at 4.23 (n=60). Independent t-tests showed that the mean differences of overall service quality existed between multiple retailers and pure players at a significant level $p=0.001$.

Pure players also scored higher in the means of all of the 12 home delivery variables (See Table 7.9). But the independent t-tests showed that statistically significant differences only existed in 3 variables, order checking, order accuracy and order condition at significant levels $p=0.004$, $p=.000$ and $p=.000$ respectively. It meant that pure players provided better order tracking and tracing system; they were better at delivering accurate and undamaged orders.

Variables	Multi-channel Retailers n=60	Pure Players n=117
Availability confirmation	4.53	4.61
Alternative offer	3.13	3.79
Specify delivery date	3.83	4.24
Order checking	3.36	4.07
Delivery on the first date arranged	3.92	4.31
Delivery in time slot	3.30	3.62
Order accuracy	4.25	4.79
Order condition	4.50	4.82
Order completeness	4.20	4.50
Easy return	3.40	4.05
Prompt collection	3.00	3.43
Prompt replacement	3.00	3.43

Table 7.9: Performance Differences between Pure Players and Multi-channels in the Twelve e-PDSQ Variables

In this pilot survey, frequency analysis showed that 92% of deliveries arrived on time as promised by retailers (n=93). Order lead time varied from 1 day to more than 7 days and no evidence was found suggesting any relationship between delivery charge and order lead time. Even within the same product sector or the same delivery charge standard, retailers' performance varied significantly. As far as the time slot is concerned, 78% of the purchases did not have an agreed time slot. 20% of deliveries were made in an am/pm slot. Only 2 out of the 92 deliveries were made in a 2-hour-slot or a 1-hour-slot.

Pearson correlation analysis was conducted to identify whether there was any correlation between respondents' perception of retailer's performance by individual variable and their perception of the retailer's overall performance. "A correlation is a

measure of linear relationship between variables” (Field 2002 p.71). Two variables can be either positively or negatively related; or there may be no relation at all.

Pearson correlation calculates the correlation coefficient (represented by R) between two variables. A coefficient of +1 indicates that two variables are perfectly positively correlated; a coefficient of -1 indicates that they are perfectly negatively correlated; a coefficient of 0 means no correlation at all (Field 2000). Pearson correlation could be a useful technique to test how people’s perceptions of the home delivery aspects, i.e. the twelve variables, were correlated with their overall perception of the service.

It was found that respondents’ perception on delivery on the first date arranged, order accuracy and order condition had the strongest positive correlation with the overall performance perception with R values of 0.656, 0.631 and 0.592 respectively, which was significant at the 0.01 level. Table 7.10 shows a two-tailed test, which is used when a relationship is expected but the direction of the relationship is not predicted. It was proved that there were positive relationships between perception of the three variables and perception of overall service. So if retailers managed to deliver the accurate products in right condition on the first date arranged, it was more likely that respondents had a good perception of the overall performance.

Variables		Overall Service Quality	Order Accuracy	Order Condition	Delivery on The First Date Arranged
Overall Service Quality	Pearson Correlation	1	0.631*	0.592*	0.656*
	Sig. (2-tailed)	.	.000	.000	.000
Order Accuracy	Pearson Correlation	0.631*	1	0.638*	0.547*
	Sig. (2-tailed)	.000	.	.000	.000
Order Condition	Pearson Correlation	0.592*	0.638*	1	0.381*
	Sig. (2-tailed)	.000	.000	.	.001
Delivery on the First Date Arranged	Pearson Correlation	0.656*	0.547*	0.381*	1
	Sig. (2-tailed)	.000	.000	.000	.
*Correlation is significant at the 0.01 level (2-tailed).					

Table 7.10: Correlation between the Perceptions of Three Variables and the Overall Performance

7.3.5 Exploratory Factor Analysis

To assess whether any of the twelve variables were items underlying constructs of the e-PDSQ framework, factor analysis was used as indicated in the two-stage methodology. Correlations may exist between variables which suggest that these variables could be measuring aspects of the same underlying dimensions. These underlying dimensions are called factors (Field 2000). Factor analysis is a statistical tool to uncover the latent dimensions of a set of variables. It reduces a large number of variables to a smaller number of factors (Field 2000, Hair et al. 1995). Exploratory factor analysis (EFA) is generally used to discover the factor structure of a measure and to examine its internal reliability. EFA is often recommended when researchers have no hypotheses about the nature of the underlying factor structure of their measure (Newsom 2005). Exploratory factor analysis has three basic decision points: (1) decide the number of factors, (2) choosing an extraction method, (3) choosing a rotation method (Newsom 2005). These points will be discussed in detail in the following paragraphs.

The reliability of factor analysis is partly dependent on sample size (Field 2000). There are alternative 'rules of thumb' as to the number of cases needed to do effective factor analysis. Hatcher (1994) proposed a 'rule of 100', i.e. the number of subjects should be five times larger than the number of variables, or 100. The common rule is 10-15 cases per variable (Field 2000). There were 12 variables in the study which required at least 120 cases. The number of cases available was 137 and was thus sufficient for factor analysis.

The first step in a factor analysis is to eliminate any variables that do not correlate with any other variables (correlation lower than 0.00001) or that correlate very highly with other variables (correlation greater than 0.9). This is to avoid extreme multicollinearity (variables that are very highly correlated) and singularity (variables that are perfectly correlated). Multicollinearity and singularity make it impossible to determine the unique contribution to a factor of the variables that are highly correlated, which may cause problems and affect the reliability of the analysis (Field 2000). A Pearson correlation matrix was created as part of the main analysis (see Table 7.11) and it showed that all variables correlated well with each other. Coefficient alpha for all variables in the matrix was 0.78 and it was considered to be reliable. Rules of thumb suggest that the

item-to-total correlation should exceed 0.50 (Hair et al. 1995). So no variable was eliminated at this early stage.

Availability confirmation	1											
Alternative Offer	0.28	1										
Specify Delivery Date	0.24	0.26	1									
Order Checking	0.21	0.18	0.27	1								
Deliver on the First Date Arranged	0.26	0.27	0.48	0.15	1							
Deliver in Time Slot	0.27	0.24	0.41	0.09	0.56	1						
Order Accuracy	0.24	-0.03	0.15	0.12	0.19	0.10	1					
Order Condition	0.21	-0.01	0.15	0.18	0.28	0.14	0.68	1				
Order Completeness	0.21	0.11	0.13	0.03	0.13	0.35	0.08	0.09	1			
Easy Return	0.46	0.18	0.25	0.19	0.37	0.31	0.25	0.27	0.14	1		
Prompt Collection	0.30	0.22	0.30	0.15	0.39	0.44	0.21	0.17	0.32	0.59	1	
Prompt Replacement	0.28	0.17	0.18	0.15	0.35	0.41	0.31	0.34	0.23	0.58	0.68	1

Table 7.11: Pearson Correlation Matrix for e-PDSQ Variables

The second step was to produce the measure of sampling adequacy. Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity measure sampling adequacy, predicting whether data are likely to factor well (Field 2000). The KMO statistics varies between 0 and 1 and values greater than 0.5 are acceptable (Kaiser 1974). Table 7.12 shows that KMO was 0.772, indicating a good value. KMO was also calculated for individual variables; variables with value below 0.5 should be removed from the analysis. The value was well above 0.5 for all variables. Furthermore, Bartlett's test was highly significant ($p < 0.001$), exhibiting fitness of the data.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.772
Bartlett's Test of Sphericity		491.744
Apprx. Chi-Square		66
Df		.000
Sig.		

Table 7.12: KMO and Bartlett's Test

The third step was to extract the factors, i.e. locating underlying dimensions of the data set. There are two methods to do so: common factor analysis (CFA) and principal component analysis (PCA). They differ in the communality estimates that are used

(Field 2000). Communalities (h^2) is the variance shared in common with all other variables included in the analysis (Child 1990). It is a good indication of whether a proper number of factors is retained (Field 2000). Communalities calculated with CFA may not always be valid and depends on various assumptions for the estimates to be accurate (Hair et al. 1995, Field 2000).

PCA, on the other hand, is a sound procedure and less complicated than CFA (Child 1990, Field 2000). It is generally used when the research purpose is to reduce the information in many measured variables into a smaller set of components. PCA does not differentiate between common and unique variance thus ignores “the intrusion of unique variance” (Child 1990, p.30). In exploratory factor analysis (EFA), the number of factors is decided on by examining output from a PCA. So PCA was used to validate the variables.

Not all factors may be retained in an analysis and factor selection can be based on two criteria: eigenvalues (scree plot) and communalities. The eigenvalue for a given factor measures the variance in all the variables which are accounted for by that factor. Kaiser (1960) recommended retaining all factors with eigenvalues greater than 1. The scree plot is a two dimensional graph with factors on the x-axis and eigenvalues on the y-axis. Figure 7.6 is the scree plot and shows that PCA produced four factors with eigenvalues greater than 1; these were initially chosen for review. A high communality of a variable indicates a well-working factor model. PCA calculation showed most variables (except order completeness, $h^2=0.39$) had high communalities (See Table 7.13).

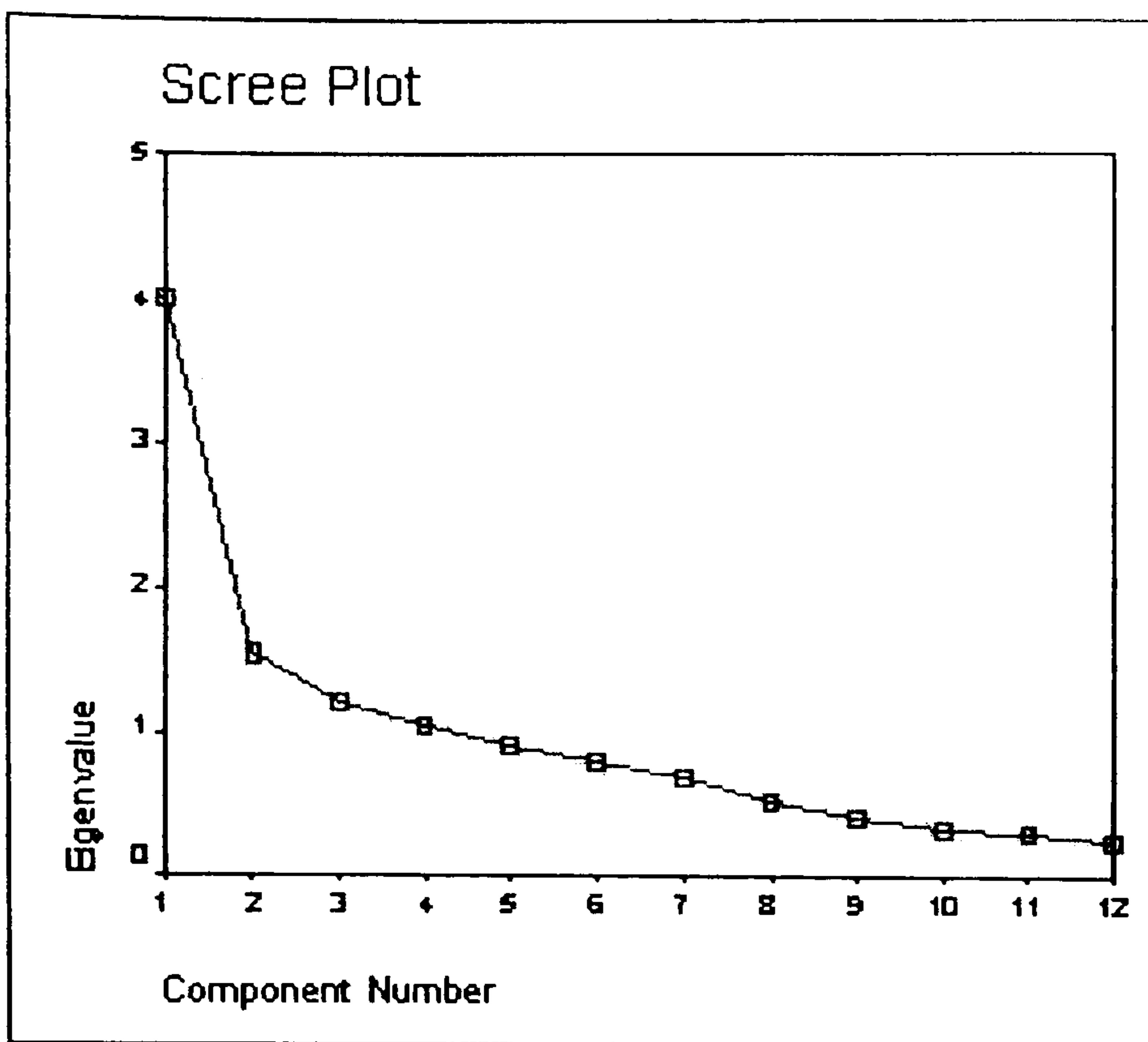


Figure 7.6: Eigenvalues of Factors

	Initial	Extraction
Availability confirmation	1	0.476
Alternative Offer	1	0.503
Specify Delivery Date	1	0.672
Order Checking	1	0.564
Deliver on the First Date Arranged	1	0.666
Deliver in Time Slot	1	0.723
Order Accuracy	1	0.796
Order Condition	1	0.817
Order Completeness	1	0.39
Easy Return	1	0.701
Prompt Collection	1	0.737
Prompt Replacement	1	0.726

Table 7.13: Communalities of Variables Produced by PCA

The next step involved the derivation of a final factor solution. PCA produced unrotated component matrix and rotated component matrix. Component matrix before rotation contains the loadings of each variable onto each factor. But as most variables load highly onto the first factor, which is also the most important factor, it is difficult to interpret to what degree the variables load onto these factors (Field 2000, Hair et al. 1995). Unrotated technique thus does not interpret adequately how the variables relate to the factors. In contrast, rotation is used to discriminate between factors (Field 2000). The objective of rotation is to “simplify the rows and columns of the factor matrix to facilitate interpretation” (Hair et al. 1995 p.109). “If a factor is a classification axis

along which variables can be plotted, then factor rotation effectively rotates these factor axes such that variables are loaded maximally to only one factor” (Field 2000 p.438).

There are two ways to run factor rotation: orthogonal rotation and oblique rotation. Orthogonal rotation is fit for research whose objective is to reduce the number of variables. It maintains the axes at 90 degrees and each variable’s loading on each factor is independent of its loading on another factor. Oblique rotation is more suitable to research which has a goal of obtaining theoretically meaningful factors or constructs (Hair et al. 1995). But this method makes variables’ loading on factors relate to each other so independence is lost. Thus orthogonal rotation was selected for the pilot survey analysis. Four factors were found using Varimax rotation with a 0.40 loading level using all twelve variables. These four factors explained 65% of the total variance (See Table 7.14).

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Communalities (h ²)
Prompt Collection	0.81				0.74
Prompt Replacement	0.80				0.73
Easy Return	0.76				0.70
Order Completeness	0.42				0.39
Deliver in Time Slot		0.77			0.72
Deliver on the First Date Arranged		0.75			0.67
Specify Delivery Date		0.72			0.67
Order Condition			0.88		0.82
Order Accuracy			0.87		0.80
Order Checking				0.73	0.56
Alternative Offer				0.55	0.50
Availability confirmation				0.49	0.48
Initial Eigenvalues	4.0	1.5	1.2	1.0	
Variance Explained	33.3%	12.9%	10.0%	8.6%	
Cumulative Variance	33.3%	46.2%	56.2%	64.8%	
Cronbach’s Alpha	0.72	0.73	0.68*	0.44	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization <i>KMO:0.772; Bartless’s Sphericity: 491.744; df=66; p=0.000</i> *Inter-item Correlation					

Table 7.14: Principal Component Rotated Factor Solution

Factor 1 contains 4 variables: prompt collection of return of goods, prompt replacement of return of goods, easy return options and order completeness. Factor 2 contains 3 variables: deliver in time slot, deliver on the first date arranged and specify delivery date. Factor 3 contains 2 variables: order undamaged and order accuracy. Factor 4 contains 3 variables: order checking, alternative offer and availability confirmation. The table shows the eigenvalues associated with each factor after extraction, representing

the variance explained by that particular factor (e.g. factor 1 explains 33.3% of total variance). All four factors have eigenvalues equal to or greater than 1.

Hair et al. note that “factor loadings are the correlation of each variable and the factor” and “indicate the degree of correspondence between the variable and the factor” (1995 p.380). The squared factor loading is the percent of variance in that variable explained by the factor (Field 2000). For instance, the variable prompt collection of return in factor 1 has a loading of 0.81, thus factor 1 accounts for 65.6% (0.81^2) of the variance of prompt collection. To get the percent of variance in all the variables accounted for by each factor, add the sum of the squared factor loadings for that factor and divide by the number of variables. Therefore, factor 1 accounts for 51.4% of variance in all the variables $(0.81^2+0.80^2+0.76^2+0.42^2)/4=0.514$.

The results were very much in line with the framework. The theoretical framework consists of 4 dimensions and 12 variables. The empirical pilot study suggests that among the 12 variables, 11 variables went to the factor which they belonged to in the framework. Therefore it was not necessary to label each factor in new terms. Factor 1 is return of goods and it includes the original 3 variables plus order completeness, which is the only variable not included in its original dimension. However, factor return of goods only accounts for 18% (0.42^2) of the variance of order completeness so the correlation is not very strong. Factor 2 and factor 4 are timeliness and availability respectively, each containing the original 3 variables. Factor 3 is condition and it has only 2 variables as order completeness goes to factor 1.

A reliability test was done to assess the internal consistency of the variables and factors by using coefficient alpha. The Reliability Analysis procedure calculates a number of commonly used measures of scale reliability and also provides information about the relationships between individual items in the scale. The calculation of coefficient alpha was based on the average inter-item correlation. Alpha values exceeding 0.70 are considered to be reliable (Hair et al. 1995). The first two factors have satisfactory factor reliability with the alpha value of 0.72 and 0.73 respectively. Factor 3 has only two variables so the value shown in Table 7.14 is the inter-item correlation instead. Factor 4, however, has poor value indicating a low reliability.

7.3.6 Discussion

The exploratory factor analysis demonstrates that the pilot survey confirms to a great extent the e-PDSQ framework developed from the literature. The only difference lies in the position of variable order completeness. Order completeness, or percentage of orders filled is considered to be an indicator of availability in the conventional logistics literature (Mentzer et al. 1989, Emerson and Grimm 1996). It was put under the condition dimension in the e-PDSQ framework as order completeness is a post-order activity in the online environment, together with the variables order accuracy and undamaged. Consumers would not be able to tell whether the order is accurate, complete and undamaged until they receive it. In this pilot survey, however, order completeness turns out to belong neither to the condition dimension or availability dimension, but return dimension. Return is often associated with damaged, faulty or unwanted products rather than order completeness. It has been suggested that the later the order reaches its consumer, the higher the probability for this order to be returned (Consumer Direct Logistics 2001).

Some orders have to be picked and packed in different warehouses; they need to be merged before finally reach the consumers. It is possible that when consumers do not get the full order, they may be suspicious of the service quality, or they simply do not want to wait for the back order. They choose to return what they have already received and cancel the whole order. "Online shoppers are known for low tolerance" (Chen and Chang 2003 p.558).

The other reason may be the dependence nature of the order. If the components of an order are dependent upon each other, e.g. a computer, consumers need to have all the components in hand to use the product. If they receive only part of the order, it is natural that they would return the order. On the other hand, the weak factor loading for order completeness indicates a weak relationship with the factor return.

The other findings will not be elaborated here as they will be discussed in the main survey section in detail. The pilot survey proved that the e-PDSQ framework has good validity thus the second stage of the method could proceed as planned. The purpose of the main survey was to investigate RQ1, RQ2 and part of RQ4.

7.4 MAIN SURVEY – DATA COLLECTION

7.4.1 Sample Selection and Instrument Details

As the pilot survey had achieved a satisfactory response rate, Edinburgh was again chosen as the sample city. The other reason was that it could be more difficult and complicated to obtain households names and addresses from councils in other cities. The sample size was set to be 2000 households which would provide adequate number of responses for statistical analysis. A larger sample would consume too many resources and be difficult to prepare and implement.

Unlike the pilot survey, whose main purpose was to validate the framework by targeting two high-income areas to get as many responses as possible, the main survey aimed to find out general trends of online shopping with minimal bias, thus a sample of areas with a broad range of social and economic background were selected. The Edinburgh council official web site was examined to choose the proper sample areas. The web site showed there were 58 wards (areas) in Edinburgh altogether. A set of key census statistics for each ward was presented, which enabled comparison between sample areas of choice on a wide range of criteria. These criteria included population, gender and age structure, household composition, economic activity, employment, education and occupation etc. Each of the 58 wards was checked on these criteria and finally four wards were selected: Leith Links, Corstorphine, Stockbridge, and New Town. Leith Links has a lower social-economic condition than the Edinburgh average, Corstorphine and New Town close to the average, Stockbridge higher than the average. The selection of these four areas was considered to be able to provide an unbiased sample to reflect a home delivery reality.

The electoral registration office was again contacted to acquire six hundred detailed household names and addresses from each of the four areas randomly. A total of two thousand and four hundred addresses were provided by the office. The addresses were checked for duplicates and after further deletion, two thousand addresses remained. The

postcodes and their respective deprivation category are summarised in Table 7.15, demonstrating a good and balanced mixture of residents.

Area	Postcode	DEPCAT*	Postcode	DEPCAT	Postcode	DEPCAT
Leith Link	EH6 4	4	EH6 6	5	EH6 7	3
	EH6 8	4	EH6 5	5		
Corstorphine	EH12 8	2	EH12 6	1	EH4 7	4
	EH29 9	3	EH12 7	3	EH12 5	2
	EH7 5	4				
New Town	EH7 5	4	EH7 4	4	EH1 3	4
Stockbridge	EH4 1	2	EH3 6	2		

Table 7.15: Postcodes and Deprivation Category Summary

*DEPCAT is short for deprivation category, ranging from 1 (the most affluent postcode sectors) to 7 (the most deprived).

The main survey used effectively the same instrument as the pilot survey. Each package included a covering letter (Appendix Three), a copy of the questionnaire (Appendix Four) and a stamped business return envelope addressed to the author. A few changes were made to the questionnaire to reflect the concerns expressed by respondents in the pilot survey and to accommodate the needs for the main study. The major change was that three new variables which were mentioned by respondents in the pilot survey were added to the e-PDSQ framework: quick delivery, specification of delivery time window and waiting time for out-of-stock product. Quick delivery and specification of delivery time window were added to the timeliness dimensions, and waiting time for out-of-stock product was added to the confirmation dimension.

Section 1 started with the same question whether respondents had shopped online before. Then the fifteen home delivery variables were listed and respondents were asked to rank how important these variables were by using a 5 point Likert scale (Hair et al. 1995) from 'unimportant' (1) to 'very important' (5). Respondents were also asked to rank the top five most important variables.

The first part of Section 2 dealt with the respondent's most recent non-food online purchase. They were asked to specify the product type, the retailer and the reasons for choosing that particular retailer, rather than the general reasons for shopping online. Then a few detailed questions regarding the most recent purchase including delivery time, delivery time window, on-time delivery, delivery cost, order value, order

composition and return were raised. These questions were used to test how these factors may influence people's perception of the overall e-PDSQ.

The following questions asked how respondents would perceive this home delivery service in accordance with the fifteen variables from 'very poor' (1) to 'excellent' (5). The respondents were also asked to evaluate the overall service quality and indicate how the perception meet their expectations. The second part of Section 2 related to unattended delivery and other non-food online purchases that respondents made over the past six months. Two more product categories, 'health and beauty', and 'flowers, gift or art' were added to the product category list for respondents to choose.

Section 3 asked for demographic information about the respondents and the purpose was to find out online consumers' characteristics and determine how they affected their attitude towards online shopping.

7.4.2 Survey Process and Response

The questionnaire was again pre-tested by five logistics experts before they were sent out. The questionnaire packages were mailed to the four areas with second-class postage at the end of May 2005, approximately sixteen days before the response deadline noted in the covering letter. The first responses came five days after the mailout date whilst the last response came at the end of June 2005, a month after the mailout date. Figure 7.7 shows the response pattern.

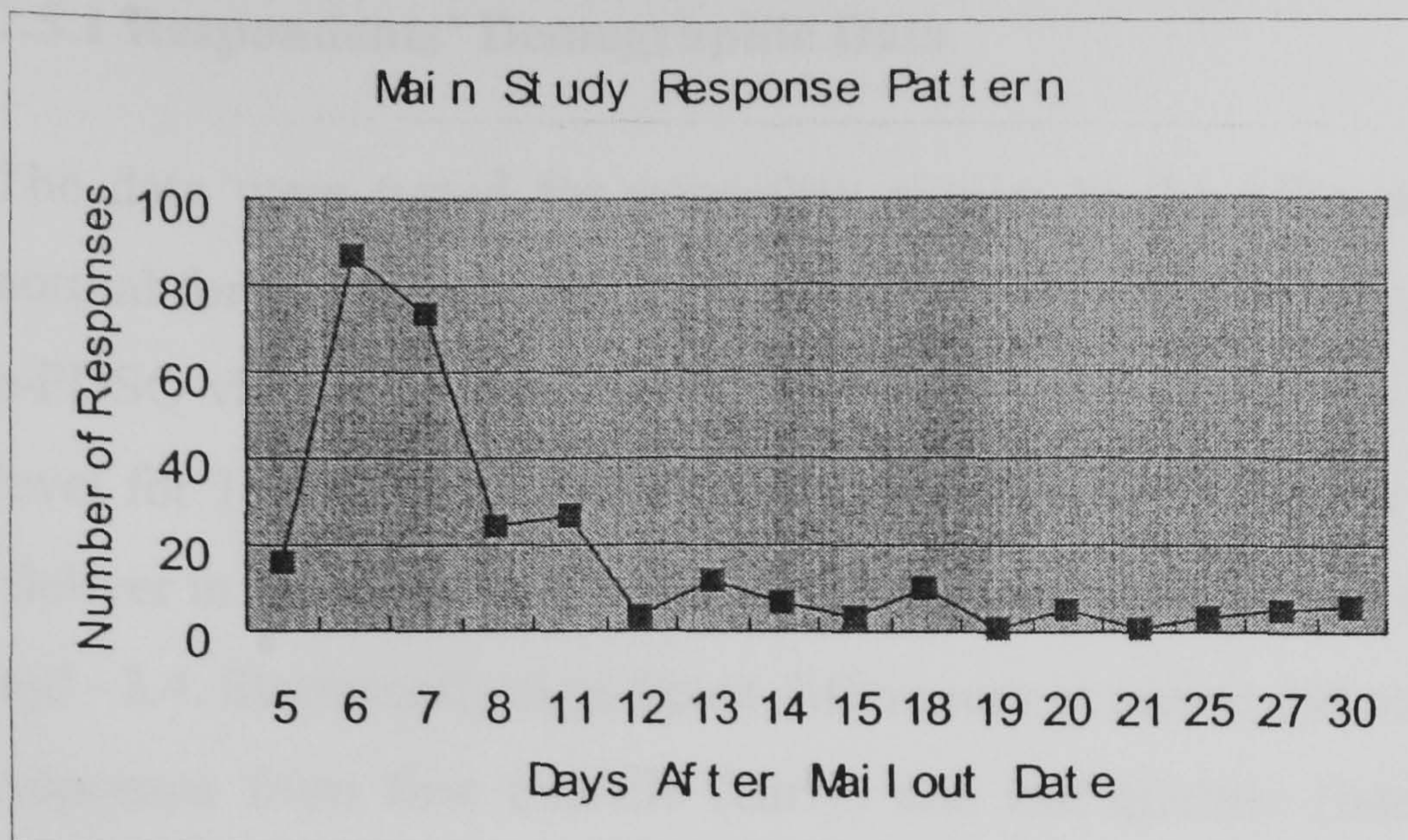


Figure 7.7: Main Study Response Pattern

Forty-eight questionnaire packages were returned unopened, with a royal mail label on the envelopes saying ‘wrong address’ or ‘address no longer exists’. The mailout generated 286 responses that included 51 empty returns. Many people explained that they were unable or too busy to help. Some others were simply not interested. Thus the main survey yielded 235 usable responses in total, making a usable response rate of 11.7%. This was lower than the 13.7% response rate in the pilot survey and had been expected as the targeted population for the main survey had a more mixed social-economic background.

7.5 MAIN SURVEY – DATA ANALYSIS

The main survey was analyzed separately from the pilot survey although the latter had a very large sample (n=137) which could stand for as a major study itself. But the analysis of the combined pilot and main surveys would not be very rigorous in terms of methodology because the questionnaires were slightly modified and three more variables were added to the framework. Thus at the end of the chapter, a short section would combine both surveys and discuss the main results to see whether there would be any significant differences.

7.5.1 Respondents' Demographic Data

The data were tested for normality similar to the pilot survey and were considered normal for statistical analysis. To test the non-response bias, t-test was applied to all 15 e-PDSQ variables and absolute t-test values were less than 1.96 at the 5% significance level for 11 variables. 'Specify delivery time slot', 'deliver on the first date arranged', 'deliver in time slot' and 'order completeness' had absolute t values of -2.36, -2.15, -3.7 and -2.4. Statistically significant differences in means did not exist for most variables of responses from first quartile (early) and last quartile (late) respondents. Thus non-response bias was small and was not an issue with the data. The following discusses respondents' demographic data.

Gender

In the 235 questionnaires returned, 79% of the respondents had shopped online and 21% had not. This figure is highly consistent with that of the pilot survey. In the pilot survey, respondents with online shopping experience also accounted for 79% of the total number of people who responded. Table 7.16 shows that there were more female respondents than male respondents. 114 females have shopped online while only 71 males have done so. Independent t-test was conducted to see whether there was significant difference between gender groups in terms of online shopping experience. P value equalled to 0.135, indicating a non-significant value. Therefore there was no significant difference between male and female in their online shopping involvement. It confirms with the literature that stereotypical Internet users used to be young, well educated men but women are increasing their involvement in online shopping quickly (Pavitt 1997, Dennis et al. 2002, Fernie and McKinnon 2003). Women are becoming the driving force for the growth of Internet shopping as some media reports have indicated recently (Marketing Week 2005, Verdict 2004); in the meantime, males are still heavily involved. This result differs from that of the pilot survey, when more males were found to have online shopping experience than females. The samples and timings of the two surveys are different, which may explain the differences. But no significant difference of Internet shopping involvement between genders was found in either survey.

Online Shopping Experience	Gender		Total
	Male	Female	
Yes	71 (30.3%)	114 (48.7%)	185 (79%)
No	16 (6.8%)	33 (14.1%)	49(21%)
Total	87 (37.2%)	147 (62.8%)	234(100.0%)

Table 7.16: Gender and Online Shopping Experience Relations

Age

Of all the respondents who had shopped online before, the 40-54 and 25-39 age groups accounted for 72% altogether. The 55-65 age group and young people aged between 16 to 24 represented 11% each, followed by elder people over 65 (see Figure 7.8). This result differs from that of the pilot survey. In the pilot survey, 45% of online shoppers were 40-54 years olds and 21% were 55-65 year olds. The pilot survey targeted on high income people, who were unlikely to be very young.

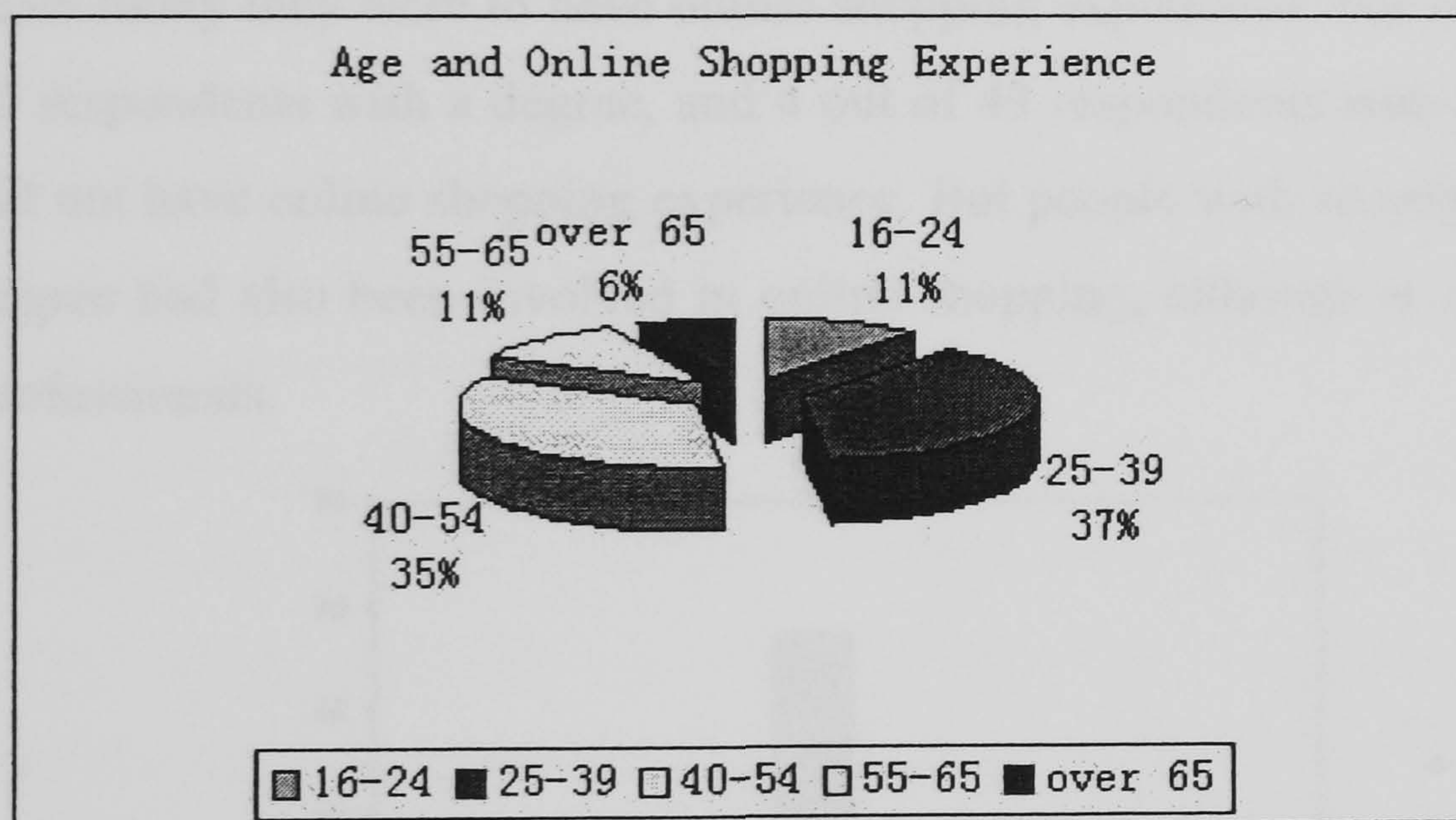


Figure 7.8: Age and Online Shopping Experience Relations

Occupation

In terms of occupation, as many as 31.6% of respondents were professionals, who also accounted for the largest single segment of people with online shopping experience (see Table 7.17). All respondents from senior managers had shopped online before. The majority of people working in the secretarial or public sector, and most students also shopped online. Nearly half of retired people had online shopping experience. This result does not differ much with the pilot survey.

Occupations	Online Shopping Experience Yes	Online Shopping Experience No	Total
Senior Manager	23 (10%)	0	23 (10%)
Professional	73 (31.6%)	7 (3%)	80 (34.6%)
Clerical / Technical	12 (5.2%)	9 (3.9%)	21 (9.1%)
Secretarial / Public Sector	31 (13.4%)	7 (3%)	38 (16.5%)
Housewife	7 (3.0%)	2 (0.9%)	9 (3.9%)
Plant and Machine Operators	1 (0.4%)	0	1 (0.4%)
Retired	17 (7.4%)	18 (7.8%)	35 (15%)
Student	16 (6.9%)	3 (1.3%)	19 (8.2%)
Self-employed	3 (1.3%)	1 (0.4%)	4 (1.7%)
Total	183 (79%)	48 (21%)	231 (100%)

Table 7.17: Occupation and Online Shopping Experience Relations

Education

Figure 7.9 shows a comparison of respondents' online shopping experience across a range of education categories. The higher the respondents' education level was, the more likely they were to have online shopping experience. For example, only 10 out of 77 respondents with a degree, and 4 out of 43 respondents with a post-graduate degree did not have online shopping experience. But people with secondary or HNC and HND degree had also been involved in online shopping, although at a lower frequency than professionals.

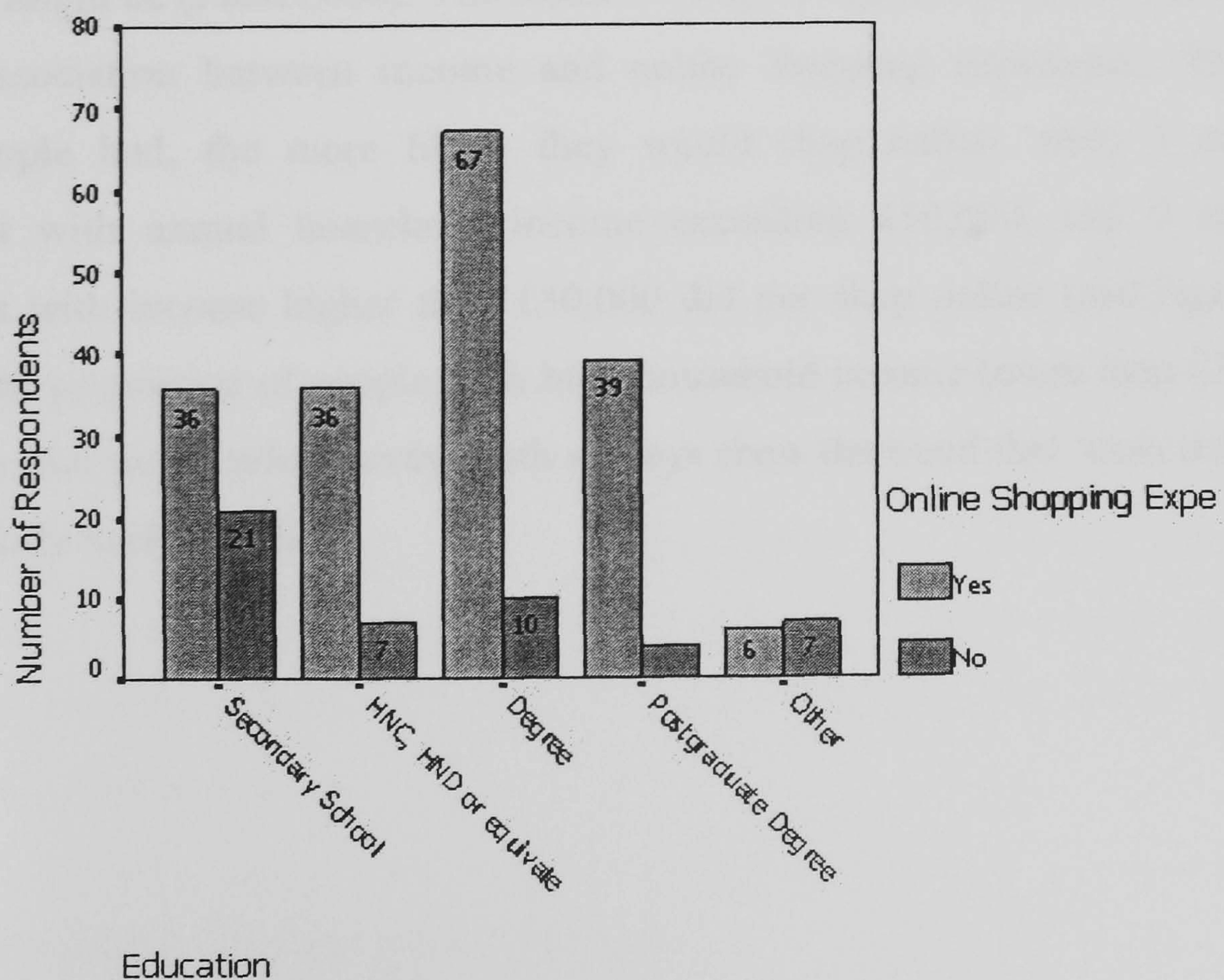


Figure 7.9: Education and Online Shopping Experience Relations

Number of residents

All but one household with four residents had shopped online before. The majority of households with more than four residents tended to have online shopping experience more than those with smaller number of residents (see Table 7.18). It was reasonable to assume that households with four, five or more residents had small children and parents did not have too much time shopping. Online shopping does not require parents to leave their home so they could take care of their children in the same time.

Online Shopping Experience	No. of Residents						Total
	1	2	3	4	5	More than 5	
Yes	35(15.1%)	73(31.5%)	27(11.6%)	44(19%)	3(1.3%)	1(.4%)	183(78.9%)
No	11(4.7%)	28(12.1%)	8(3.4%)	1(.4%)	0(0.0%)	1(.4%)	49(21.1%)
Total	46(19.8%)	101(44%)	35(15.1%)	45(19.4%)	3(1.3%)	2(.9%)	232(100%)

Table 7.18: Number of Residents and Online Shopping Experience Relations

Income

Cross-tabulation and chi-square were conducted to test the relations between income and online shopping experience. Chi-square detects whether there is a significant association between two categorical variables although it does not say how strong these association might be (Field 2000). The result was highly significant, $p=0.000$, indicating a strong association between income and online shopping experience. The higher income people had, the more likely they would shop online. Only 5 out of 63 respondents with annual household income exceeding £50,000, and 9 out of 76 respondents with income higher than £30,000 did not shop online (see Figure 7.10). Although the proportion of people with high household income (more than £30,000) is smaller than that in the pilot survey, both surveys show the trend that 'cash rich' people are more likely to shop online.

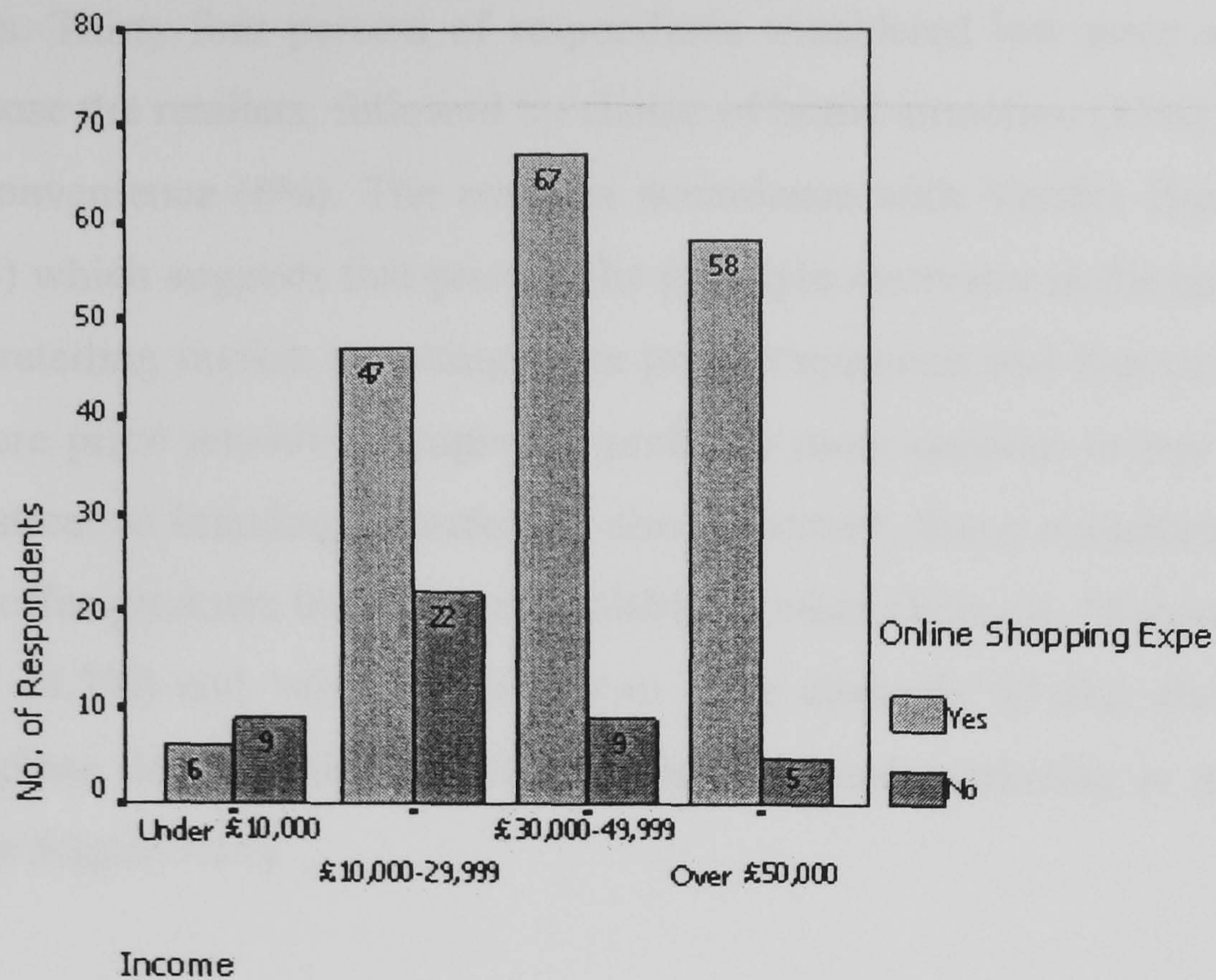


Figure 7.10: Income and Online Shopping Experience

Summary of demographic information

The above analysis shows that online shopping phenomenon is penetrating into most social and economic classes although the degree varies. The cash-rich and time-poor people are among the keenest to explore the Internet offering; both men and women are buying online although what they buy may be different; the age group with highest percentage of the Internet shoppers is 25 to 54s (72%) but even retired people aged over 65 are not all left behind; busy parents with young children may find online shopping convenient; people with high income and professional or managerial jobs may be more likely to shop online but those earning low to middle income with other jobs can also be online shoppers; education affects people's online shopping experience to some extent but far from decisively. It is getting more and more difficult to depict a stereotype online shopper: it can be anyone. The Verdict Home Delivery Report (2004) found that every social class recorded deeper penetration level of home delivery and most affluent households have the highest percentage of users among them. The results of the main survey result confirm this.

Reasons to Choose a Specific Online Retailer

In the pilot survey, respondents were asked why they shopped from the Internet. In the main survey, respondents were asked to specify the primary reason that made them choose the particular online retailer concerning the most recent online purchase of non-

food products. Thirty-four percent of respondents considered low price as the major reason to choose the retailers, followed by choice of brand attraction (23%), availability (14%) and convenience (8%). The result is accordance with Verdict Home Delivery Report (2004) which suggests that price is the principle motivator in the home delivery market. The retailing market is getting more price transparent and thus consumers are becoming more price sensitive. People are probably more cautious to buy online than from a high street so branding attraction is also important. Some e-retailers, especially pure players offer products that are not available in other channels. 'Recommended by other people' (4.7%) and 'advertisement from other channels' (3.6%) also stimulated people's purchase desire which shows that cross-channel marketing is getting more important (see Figure 7.11).

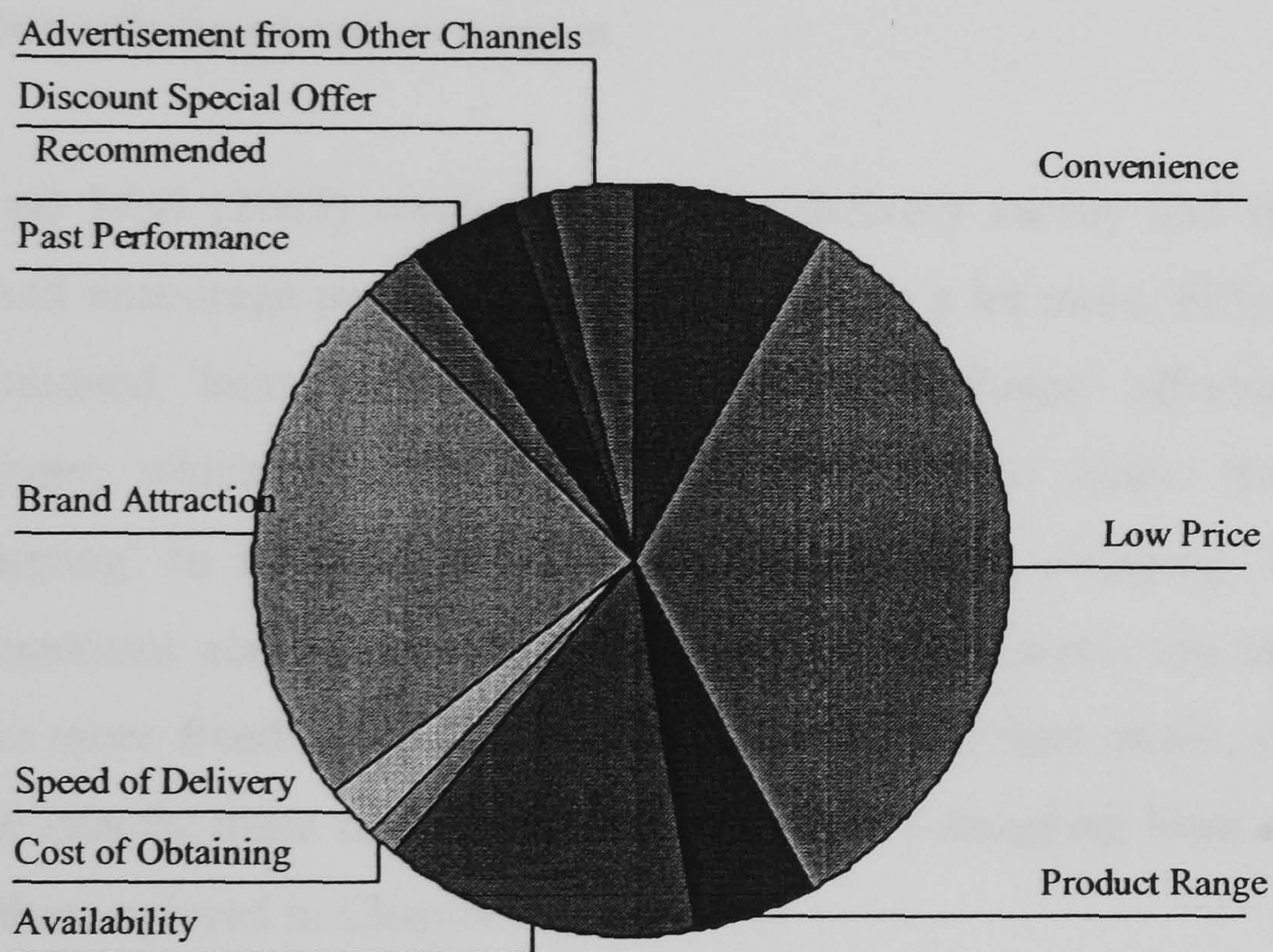


Figure 7.11: Respondents' Reasons to Choose a Particular e-Retailer

Various cross-tabulations were conducted to test the relationship between respondents' demographic data and the reasons to choose a particular e-retailer. No significant trend was detected. For example, low price was not just preferred by people with low to medium income; those who had high income with managerial or professional jobs cited low price as the primary reason also. Therefore, respondents' online shopping behaviour was not solely decided by their social and economic status. Respondents chose e-retailers for similar benefits.

Catalogue Shopping Habit

In the main survey, consumers were also asked whether they were frequent catalogue shoppers. As many e-retailers were originally catalogue retailers, who have developed other channels, catalogue shoppers' interest and attention may be diverted into other channels. To test how much influence people's catalogue shopping habit had on their online shopping experience, chi-square was used. The null hypothesis (H_0) was that the two variables, catalogue shopping experience and online shopping experience were independent. The experimental hypothesis (H_1) was that they were in some way related. The test showed a highly non-significant value, $p=0.108$, indicating that the probability of the chi-square statistic being a chance result was 0.108. Thus H_0 was accepted and there was no significant association between a respondent's catalogue shopping experience and online shopping experience. A frequent catalogue shopper may not necessarily be an online shopper.

Royal Mail (2005) conducted a home delivery survey and investigated factors that would encourage people to do home shopping a lot more. Fifty percent of respondents mentioned 'being able to browse retailers' catalogue' affected their home shopping activity, which was the eleventh most important factor. But they defined 'home shopping' to include both Internet and catalogue shopping. Therefore although the interactions across between different shopping channels are taking place, and people have more freedom to choose whichever channel they prefer, it is still difficult to say how exactly these channels influence people's shopping behaviour. This point will be further explored in Chapter Eight.

7.5.2 E-PDSQ Variables Importance

Table 7.19 presents the comparison and ranking in the means across the fifteen variables in the refined e-PDSQ framework.

Variables	Online Experience YES (n=185)	Online Experience No (n=49)	Total (n=234)	Standard Deviation (n=234)
Order Condition	4.93 (1)	4.96 (1)	4.94 (1)	0.278
Order Accuracy	4.88 (2)	4.82 (2)	4.86 (2)	0.386
Easy Return	4.63 (3)	4.69 (5)	4.64 (3)	0.571
Availability confirmation	4.59 (4)	4.69 (5)	4.62 (3)	0.626
Deliver on the First Date Arranged	4.47 (6)	4.73 (4)	4.53 (5)	0.725
Prompt Replacement	4.50 (5)	4.63 (7)	4.53 (5)	0.656
Specify Delivery Date	4.37 (7)	4.78 (3)	4.45 (7)	0.781
Prompt Collection	4.33 (9)	4.51 (11)	4.37 (8)	0.719
Ability to Deliver Quickly	4.30 (8)	4.31 (13)	4.30 (9)	0.779
Deliver in Time Slot	4.22 (10)	4.59 (8)	4.30 (9)	0.877
Waiting Time for out-of Stock	4.20 (11)	4.53 (10)	4.27 (11)	0.864
Order completeness	4.14 (13)	4.39 (12)	4.19 (13)	0.921
Specify Delivery Time Slot	4.02 (12)	4.59 (8)	4.14 (12)	0.950
Order Checking	3.82 (14)	3.82 (14)	3.82 (14)	0.986
Alternative Offer	2.58 (15)	3.59 (15)	2.79 (15)	1.154

Table 7.19: Means Comparisons of the Fifteen Variables

Respondents without online shopping experience tended to give higher scores to most variables, while people with online shopping experience were more likely to make a distinction within the variables. An independent t-test was used to check whether there were significant differences of variable means between respondents who had online shopping experience and those who did not.

T-test showed that the following variables, 'specify delivery date' ($p=.000$), 'specify delivery time slot' ($p=.033$), 'deliver on the first date arranged' ($p=.002$), 'delivery in time slot' ($p=.029$), and 'prompt replacement' ($p=.019$) were significant at the 0.05 level, which showed that there was significant difference in the means of these variables between those who had shopped online and those who had not. These differences mainly concentrate on dimension 'timeliness'. Respondents who had not shopped online yet were concerned or had doubts about a retailer's timeliness so they attached more importance to timeliness dimension. Thus timeliness may be a major barrier that retailers have to overcome to attract new consumers. Unless retailers can prove that they have superior timeliness performance, consumers with doubts may be likely to stay away from online shopping. This result of the main survey resembles that of the pilot survey. The sequence of the importance of the variables varied slightly between the two surveys.

The first five most important variables were: availability confirmation, order accuracy, order condition, specify delivery date and deliver on the first date arranged. This result is the same with the pilot survey, suggesting a high consistency of consumers' point of views.

7.5.3 E-PDSQ Performance

Overall E-PDSQ Performance

Respondents were asked how they would perceive the overall home delivery service provided by the e-retailers through which they made their most recent online purchase and other purchases within the past six months (they were asked to list up to five recent purchases). In the data analysis, the retailers mentioned were classified into more detailed categories which was made possible by sufficient data. Some pure players were not really 'pure players' in the sense that they had one store or operated through catalogues. So pure players were further classified into pure players, primarily pure players with one store and primarily pure players with the catalogue. As to the multi-channel retailers, some were multiple, well-known retailers with 10 or more branches across the country; while others were independent retailers with up to 10 stores (Kent and Omar 2003). Some respondents purchased from direct sellers, i.e. manufacturer, wholesaler or distributor. The scales and structures of multiple and independent retailers were different and it was necessary to make a distinction. Thus all retailers mentioned were again divided into six categories: multiple retailers, pure players, independent stores, primarily pure players with one or two stores at the most, primarily pure players with catalogue operation and manufacturer/direct sellers, wholesaler or distributor. Table 7.20 shows the comparisons of people's perceptions of the overall service quality by different retailers. More respondents shopped from pure players than multi-channel retailers.

Type	Mean	Number	Std. Deviation	Minimum	Maximum
Multiple retailers	4.13	92	1.092	Very poor	Excellent
Pure players	4.43	265	.771	Very Poor	Excellent
Independent stores	4.35	17	.931	Medium	Excellent
Primarily pure player (Internet+store)	4.67	24	.482	Good	Excellent
Primarily pure players (Internet+catalog)	4.52	33	.834	Poor	Excellent
Manufacturer, wholesaler or distributor	4.22	18	1.215	Very poor	Excellent
Total	4.38	449	.865	Very poor	Excellent

Table 7.20: Comparisons of the Overall Service Quality by Different Retailers

The standard deviation of multiple retailers and independent stores is larger than that of pure players, indicating a less consistent service performance. Both pure players and primarily pure players had higher means than multi-channel retailers. An independent sample T-test was conducted among various pairs of retailers to find out whether there were any significant differences in overall service quality between them. Significant differences were found between the following groups of retailers:

Two groups of Retailers	Significant Level
Pure players and multiple retailers	P=.000
Primarily pure players (Internet + store) and multiple retailers	P=.002
Primarily pure players (Internet + store) and independent stores	P=.000
Pure players and manufacturer/direct sellers, wholesaler or distributor	P=.005
Primarily pure players (Internet + store) and manufacturer/direct sellers, wholesaler or distributor	P=.002

Table 7.21: Significant Means Differences among Various Groups of Retailers

The results highlight that in general, pure players were perceived to have better home delivery performance than multi-channel retailers. This finding is consistent with the pilot study which also showed that pure players had better e-PDSQ than multi-channel retailers. Primarily pure players with one or two stores at most were especially outstanding, with a better performance than most other retailers. However, as the sample was small, the result could be affected by some extreme cases and thus may be biased.

When asked whether the service quality met respondents' expectations, as many as 69% of respondents perceived the service quality met their expectation. Eighteen percent and 10% of respondents perceived the service exceeded their expectations or far exceeded

expectation respectively. Only 3% of respondents perceived the service fell below their expectations or far below expectations.

Online home delivery service in general was satisfactory with only 12 out of 167 services were considered to be poor or medium. Cross tabulation was conducted between respondents' perceptions of overall service quality and how it met their expectations. The result is shown in Table 7.22.

Overall Service Quality	Expectations vs. Perceptions					Total
	Far below expectation	Below expectation	Meet expectation	Exceed expectation	Far exceed expectation	
Poor	1 (.6%)	2 (1.2%)	0	0	0	3 (1.8%)
Medium	1 (.6%)	0	8 (4.8%)	0	0	9 (5.4%)
Good	0	1 (.6%)	46 (27.5%)	5 (3.0%)	1 (0.6%)	53 (31.7%)
Excellent	0	0	61 (36.5%)	26 (15.6%)	15 (9.0%)	102 (61.1%)
Total	2 (1.2%)	3 (1.8%)	115 (68.8%)	31 (18.6%)	16 (9.6%)	167 (100%)

Table 7.22: What Respondents Expect vs What They Perceived

Table 7.22 indicates that 46 out of 53 respondents who considered the service quality to be good and 61 out of 102 respondents who considered the service quality to be excellent thought the service met expectations. This highlights the fact that consumers nowadays are becoming more demanding. They expect high-quality service. When they do receive excellent home delivery service, they would probably take it for granted.

E-PDSQ Variables Performance

Respondents' perceptions of retailers' performance in the fifteen home delivery variables were analysed. Independent and multiple retailers were grouped as multi-channel retailers; pure players, primarily pure players with Internet and store, and primarily pure players with Internet and catalogue as pure players. The reason to do so was these questions were only related to respondents' most recent purchase, thus the number of the retailers was not statistically significant to classify them into the six retailer groups as in the analysis of the overall service quality.

Table 7.23 shows the comparison of means, standard deviation and number of cases between the two groups. The numbers for each variable varied as respondents could only score the service they received. For example, fewer respondents used return service so the numbers of respondents for 'return' dimension were smaller. Unlike the

pilot survey, where all twelve variables scored higher in pure players than in multi-channel retailers, this time multi-channel retailers scored higher in most variables of availability dimension, 'availability confirmation', 'alternative offer' and 'how long to wait if out-of-stock'. Multi-channel retailers also scored higher in 'order condition' and 'prompt replacement of returns'.

Variables	Multi-channel retailers			Pure players		
	Number	Mean	Standard Deviation	Number	Mean	Standard Deviation
Availability confirmation	16	4.88	.342	127	4.55	.784
Alternative offer	16	3.72	.866	50	3.36	1.174
How long to wait if out-of-stock	12	4.08	.793	52	3.96	1.084
Specify delivery date	17	3.94	1.088	112	3.95	1.056
Specify time slot	15	3.13	1.187	68	3.16	1.421
Order checking	15	3.20	1.373	104	3.98	1.014
Delivery on the first date arranged	15	4.00	1.254	91	4.42	.944
Delivery in time slot	13	3.38	1.261	64	4.06	1.139
Quick delivery	16	3.81	1.223	118	4.20	1.051
Order accuracy	16	4.69	.704	128	4.88	.463
Order condition	16	4.94	.250	126	4.82	.543
Order completeness	11	4.27	1.212	69	4.51	.980
Easy return	12	4.00	1.128	39	4.15	.933
Prompt collection	7	3.43	1.272	15	3.47	.743
Prompt replacement	5	3.40	1.517	17	3.29	1.047

Table 7.23: Comparison of Means of Fifteen Variables between Multi-channel and Pure Players

To see whether significant performance differences in the fifteen variables exist between multi-channel retailers and pure players, independent sample t-tests were conducted. Statistically significant differences existed in three variables: order availability confirmation ($p=0.001$), order tracing ($p=0.026$) and order accuracy ($p=0.009$). Multi-channel retailers did better in order availability confirmation, while pure players did better in order tracing and tracking and order accuracy.

Correlation between Respondents' Perceptions of the Overall Performance and the Fifteen Variables

Pearson correlations were again conducted between respondents' perceptions of home delivery aspects, i.e. the fifteen variables and their perceptions of the overall service quality. Table 7.24 shows that in general dimension timeliness and return had stronger positive correlations with overall service quality than dimension availability and condition. The four variables with the highest correlation coefficients were prompt

replacement of returned product (R=0.772), quick delivery (R=0.663), prompt collection of returned product (R=0.654) and delivery on the first date arranged (R=0.631). This result was different from that of the pilot survey, where order accuracy and condition had very high R values.

Overall Service Quality			
	Pearson Correlation	Sig. (2-tailed)	N
Prompt Replacement of Returned Product	.772(**)	0	23
Quick Delivery	.663(**)	0	139
Prompt Collection of Returned Product	.654(**)	0.001	23
Delivery on the First Date Arranged	.631(**)	0	110
Specify Delivery Date	.548(**)	0	132
Delivery in Time Slot	.521(**)	0	81
Order Accuracy	.507(**)	0	148
Availability confirmation	.448(**)	0	146
Specify Time Slot	.426(**)	0	87
Order Completeness	.413(**)	0	83
How Long to Wait if out-of-stock	.382(**)	0.002	66
Easy Return	.347(*)	0.011	53
Order Checking	.343(**)	0	122
Order Condition	.330(**)	0	146
Alternative Offer	.202	0.11	64

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 7.24: Correlation between People's Perceptions of the Variables and the Overall Performance

This analysis reflects that if retailers deliver products quickly, keep the delivery promise and handle returns properly, respondents are likely to associate these aspects of home delivery with a high overall service quality. Therefore, if retailers want to improve their service, they could achieve better effects by targeting on short and on-time delivery and good return arrangement.

On-time delivery

Respondents were asked whether the order arrived on time as promised by the retailer and how long it took for their most recent order to arrive. Ninety-three percent of orders arrived on time (n=160 in total). A Pearson correlation test was conducted between on-time delivery and respondents' perceptions of e-PDSQ. The test produces a strong coefficient value of R= -0.419 at a significance value of p=.000. Thus on-time delivery strongly affected perceptions of e-PDSQ. If the delivery was made on time, overall e-

PDSQ was perceived to be high. All deliveries that failed to show on time led to either poor or very poor overall service quality perception.

Figure 7.12 shows the frequency of order lead time. 34.8% of order arrived within 3-4 days. Only 7.9% of the orders were delivered next day. Cross-tabulation was conducted between product categories and order lead time. It was found that retailers varied a lot from one to another in order lead time for the same product category. Also, there was no evidence that a delivery charge was associated with better order lead time. The next day deliveries were not necessarily the most expensive ones. On the contrary, all orders with more £10 delivery charge took at least more than 3 days to arrive. These orders may be furniture or other bulky products.

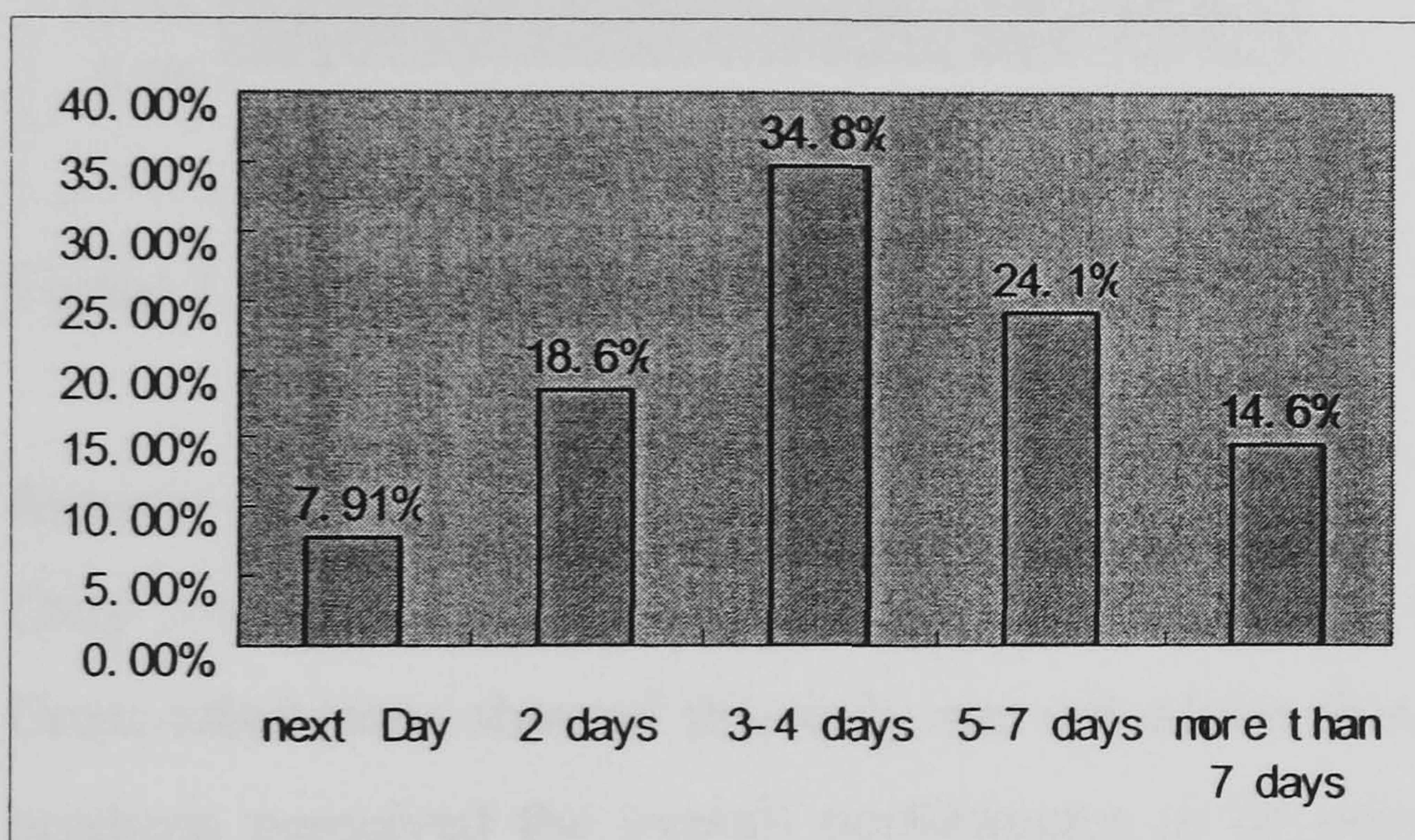


Figure 7.12: Order Lead Time Frequency

To see how delivery lead time was correlated to respondents' perceptions of e-PDSQ, a Pearson test was conducted. The test produced a coefficient value of $R = -0.29$ at a significance value of $p = .000$. Therefore order lead time negatively affected the overall perception of e-PDSQ. The shorter the order lead time was, the higher the e-PDSQ perceptions were. Therefore shortening order lead time can help retailers to improve their performance.

Figure 7.13 shows the frequencies of delivery time window. Eighty-one percent of orders did not have a delivery time window at all ($n = 164$ in total). Seventeen percent had a morning or afternoon time window. A very small number of deliveries were made within a 2 hours or 1 hour slot. And all these short-time window deliveries were

considered to have excellent or good service quality. Snow Valley (2005) did a report on the delivery information found on 100 UK online stores and 81% of retailers did not offer any choice of delivery time. Seven percent offered post purchase phone calls to consumers to arrange deliveries and the rest 12% offered time window options. The results were very similar to those of this study.

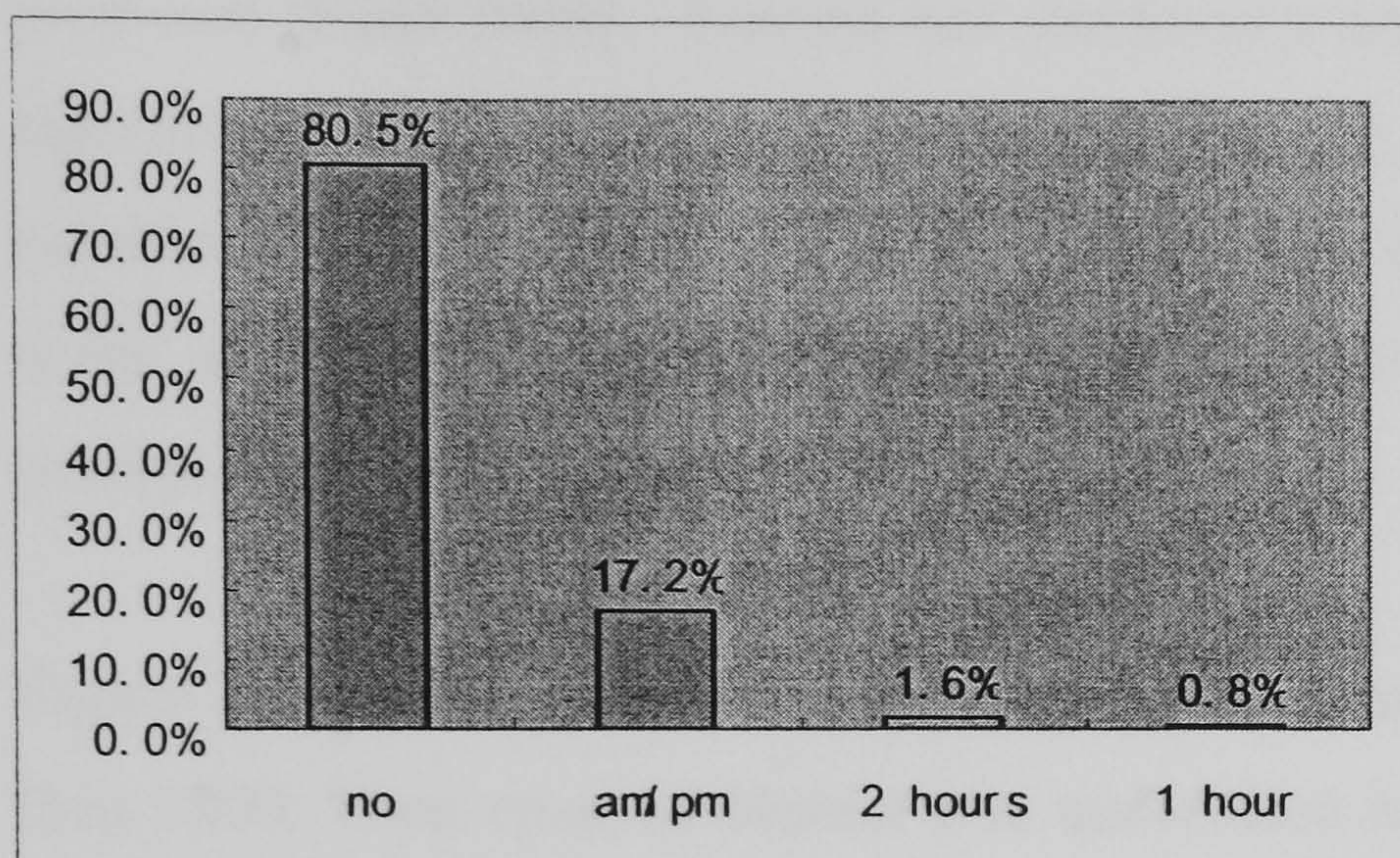


Figure 7.13: Delivery Time Window

Returns and order completeness

Only 3% of products were returned (n=5) and they were mostly clothing products. Cross-tabulations showed that only one out of the five respondents who had to return products perceived the overall performance to be poor. The other four perceived the overall performance to be either good or very good, which suggested that if returns were handled well, consumers could still have high evaluation of the service quality.

Sixty-two percent of orders consisted of only one item and 38% multiple items. Most multiple items were computer products, clothing, books and CDs and houseware.

7.5.4 Factors Influencing Respondents' Perceptions of E-PDSQ

This section discusses a few possible factors, such as order value, delivery charge and product category that may have affected respondents' perceptions of e-PDSQ from e-retailers. Coefficient was used as the primary technique to test the associations.

Order Value

Hypothesis 1: Order value and respondents' perceptions of e-PDSQ were positively correlated, i.e. the more expensive the product was the better e-PDSQ was.

One-tailed correlation tests were selected as directional hypotheses were developed. Two-tailed tests should be used when the nature of the relationship could not be predicted (Field 2000). Pearson test produced a coefficient value of $R=.000$ at a non-significance value of $p=0.5$. Thus hypothesis 1 was rejected and there were no significant correlations between order value and e-PDSQ performance. Whether the order was valuable or inexpensive did not have significant effect on consumers' perception of service quality.

Figure 7.14 shows that 67% of orders were worth under £50 and 18% were worth more than £200. Then cross-tabulation was undertaken to test the relations between product category and product value. Books and CDs, flower and gift, health and beauty products were normally of low-value. Most computer products, furniture and art products were worth more than £200. Products from the rest of the categories were less predictable: they could be either expensive or inexpensive (see Table 7.25).

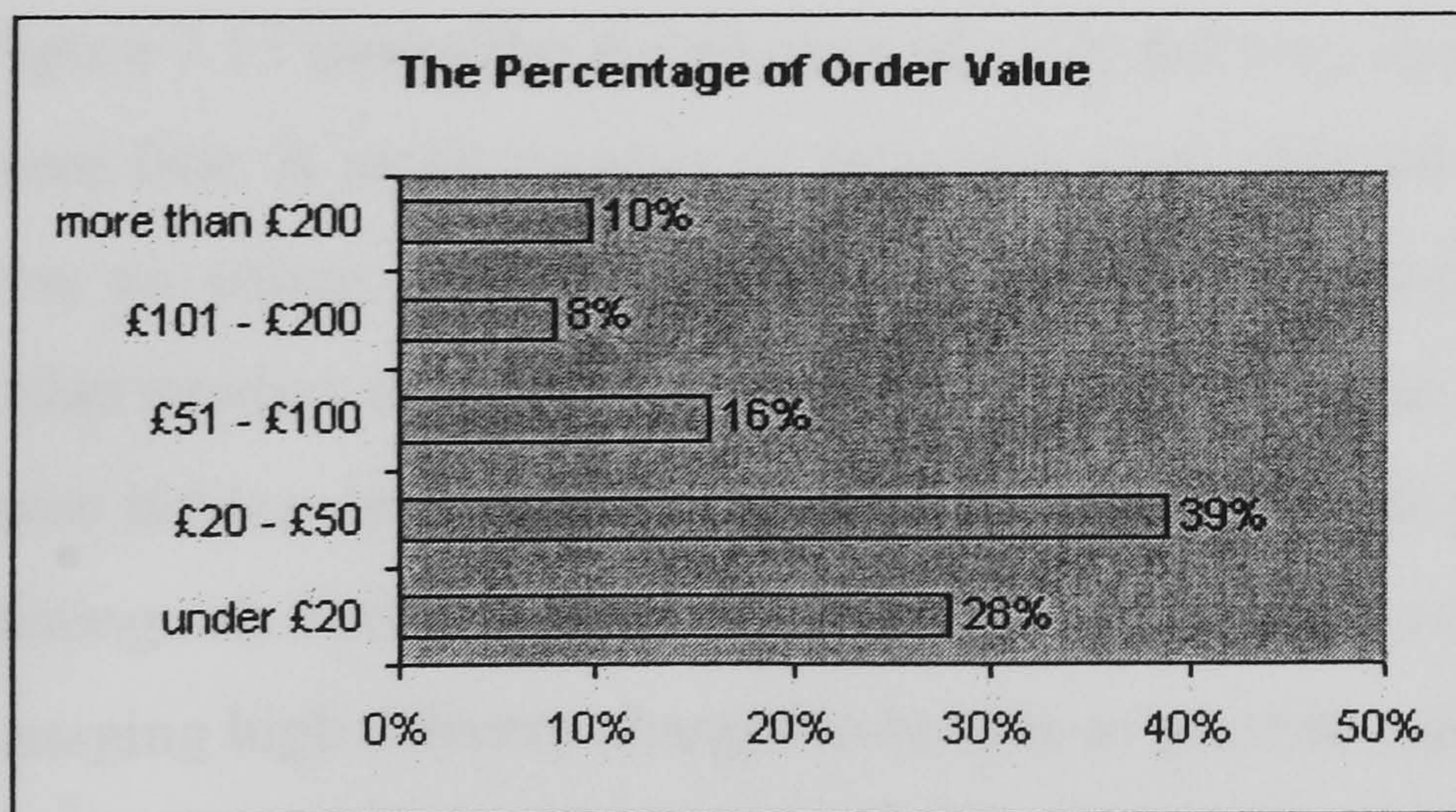


Figure 7.14: The Percentage of Order Value

Product Type	Order Value					Total
	Under £20	£20 - £50	£51 - £100	£101 - £200	More than £200	
Computer products	1	1	2	0	4	8
Photographic products	1	1	0	1	1	4
Furniture	0	0	0	0	1	1
Electrical appliances	3	3	1	5	3	15
Clothing	3	13	7	2	0	25
Sports products	0	4	0	1	2	7
Toys	0	0	1	0	0	1
Books & CDs & software	36	28	5	0	0	69
Houseware	0	6	4	3	4	17
Health & beauty	1	3	1	0	0	5
Flower, gift & art	1	5	3	0	1	10
Total	46	64	26	13	16	165

Table 7.25: The Cross-tabulation between Order Value and Product Category

Order Delivery Charge

Hypothesis 2: Delivery charge and respondents' perceptions of e-PDSQ were positively correlated, i.e. the higher the delivery charge was the better e-PDSQ was.

Pearson test produced a weak coefficient value of $R = -0.042$ at a non-significance value of $p = 0.3$. Thus hypothesis 2 was also rejected and there were no significant correlations between delivery charge and e-PDSQ performance. A high delivery charge did not necessarily deliver a superb service.

Figure 7.15 shows the distribution of order delivery charge. More than half of deliveries were free. A small number of deliveries were charged more than seven pounds. There was no strong evidence suggesting that delivery charge was directly associated with either product category (see Table 7.26) or order value. However, some companies may have hidden delivery charge, which is included in the product price; while others may distinguish between these two. In an ideal world, consumers would expect retailers charging high delivery charges to be able to provide superb performance. Unfortunately, it may not always be the case. A reason to explain this may be that high delivery charge normally applies on big items such as furniture which is difficult to deliver; damages and delays are more likely to occur. Thus a high cost implies a more difficult delivery job to some extent.

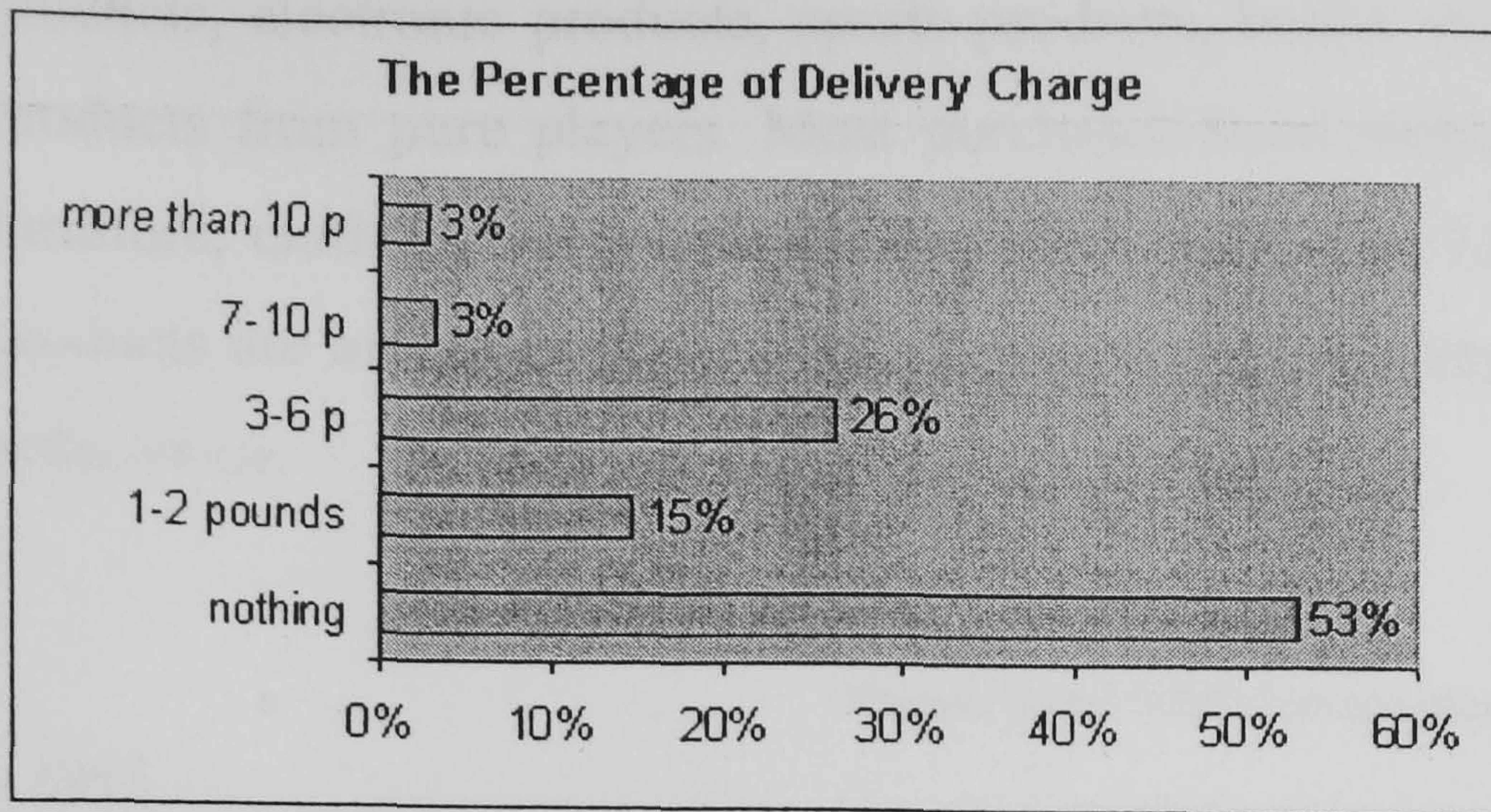


Figure 7.15: The Distribution of Delivery Charge

Product Type * Delivery Cost Crosstabulation

Count		Delivery Cost					Total
		nothing	1-2 pounds	3-6 pounds	7-10 pounds	more than 10 pounds	
Product Type	Computer products	7	0	1	0	0	8
	Photographic products	4	0	0	0	0	4
	Furniture	0	0	0	0	1	1
	Electrical appliances	8	0	5	1	1	15
	Clothing	11	2	10	0	0	23
	Sports products	3	0	2	1	1	7
	Toys	1	0	0	0	0	1
	Books & cds & software	39	17	9	2	0	67
	Housewares	9	1	7	0	0	17
	Health & Beauty	2	1	2	0	0	5
	Flowers, Gift & Art	3	2	4	0	1	10
Total		88	24	41	4	4	161

Table 7.26: The Cross-tabulation between Product Category and Delivery Charge

Independent T-test was conducted to see whether retailer type might affect order value or delivery charge. Surprisingly, both tests were significant at $p=0.003$ and $p=0.001$ respectively. Products purchased from multi-channel retailers were of higher value than those from pure players. And multi-channel retailers charged more for deliveries. This is an important finding. If assuming that retailers incur the same delivery cost, this finding can be generalized. It means that multi-channel retailers are making more money than their Internet rivals, who probably have to compete heavily on price, which leaves them a small margin.

A cross-tabulation was conducted between the retailer type and product category to see whether the above findings were caused as a result of respondents purchasing different product categories. It showed that respondents bought most computers, photographic

products, electronic products, sports products, books and CDs and health and beauty products from pure players. Most purchases from multi-channel retailers focused on furniture, clothing and houseware products (see Table 7.27). Furniture and houseware products are bigger in size, which require higher delivery charge, and probably higher order value.

Product Type * TYPE Crosstabulation

Count		TYPE					Total	
		Multiple retailers	Pure players	Independent stores	Primarily pure player (Internet+ store)	Primarily pure players (Internet+ catalog)		Manufacturer, wholesaler or distributor
Product Type	Computer products	0	6	0	0	0	2	8
	Photographic products	0	3	0	1	0	0	4
	Furniture	1	0	0	0	0	0	1
	Electrical appliances	2	10	0	1	0	0	14
	Clothing	3	5	5	5	8	0	26
	Sports products	0	5	0	1	0	0	6
	Toys	0	0	0	0	1	0	1
	Books & cds & software	1	63	0	1	2	1	68
	Housewares	5	6	1	1	3	1	17
	Health & Beauty	0	4	0	0	0	0	4
	Flowers, Gift & Art	1	5	0	1	0	0	6
Total		13	109	6	11	14	4	167

Table 7.27: The Cross-tabulation between Product Category and Retailer Type

Also, furniture, clothes and houseware products have higher ‘touch and feel’ factor than the other categories; thus it is reasonable to assume that consumers go to shops to see the products first and then go home and order them from the Internet. It to some extent confirms the theory that lots of shops are becoming show rooms (Reynold 2000).

Product Categories

Hypothesis 3: product category and respondents’ perceptions of e-PDSQ were correlated.

A two-tailed Pearson test was conducted and produced a weak coefficient value of $R = -0.043$ at a non-significance value of $p = 0.576$. Thus hypothesis 3 was also rejected and there were no significant correlations between product category and e-PDSQ performance. Although all these hypotheses were rejected, it should be noted that the sample was very small and may well have limitations.

Figure 7.16 shows the frequency of products purchased through the Internet by respondent. Books and CDs were the most frequently purchased products, followed by computer products, flowers, gift or art, electronic products and photographic products. Respondents were also buying clothes, toys, sports products, health and beauty, houseware and furniture online, though at a lower frequency. The least online purchased product category was furniture.

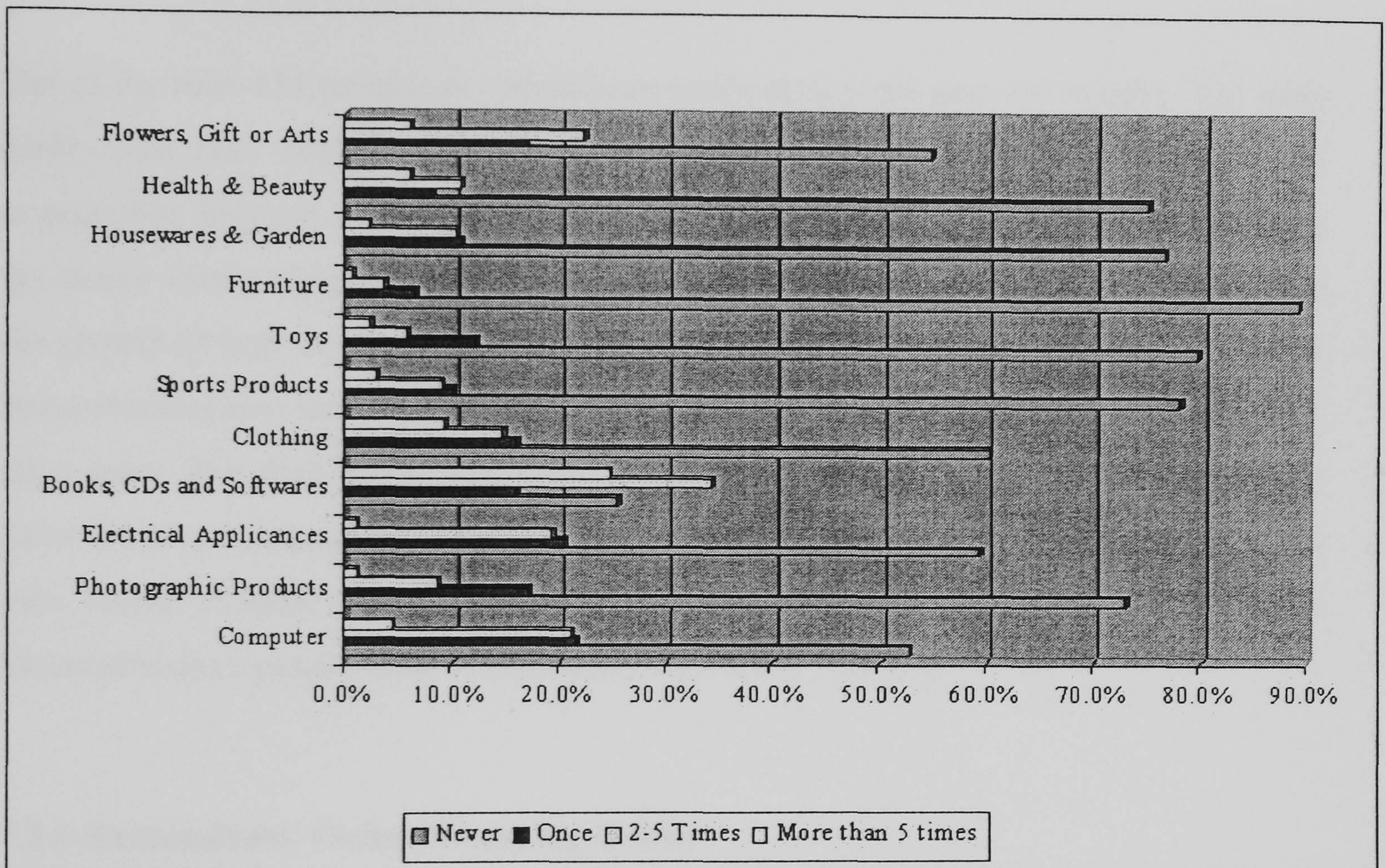


Figure 7.16: Frequency of Purchase of Different Product Categories

Amazon was the most popular e-retailer and its dominance was unquestionable. Other frequently listed pure players included 'play.com', 'CDwow', '7dayshop.com' and 'Dell'. Frequently mentioned multi-channel retailers included John Lewis, Comet, Argos Company, Currys, Marks and Spencer, HMV and Maplin etc.

Various cross-tabulations were conducted to test the possible relationships between demographic information of the respondents and their purchasing habits. Females bought more clothes, flowers, gift or art and health and beauty online than males. Males bought more electronic products. As to the relationship between occupation and product type, housewives mainly shopped online for children's clothes and toys. Retired respondents tended to buy books, CDs and housewares. Professional respondents or

respondents work in secretarial or public sector were among the keenest groups to buy clothes online.

Respondents with higher income (more than £30,000) purchased a broader range of products, which almost covered every category; while respondents with lower income tended to limit their purchases to a few categories such as books, houseware and computer products.

Out of the total 431 purchases respondents made during the past six months, 322 were made from pure players and 109 were from multi-channel retailers. The fact that respondents shopped a lot more from pure players than multi-channel retailers confirms the recent media reports: growth of Internet shopping is accelerating year by year while the growth of high street sales is slowing down (IMRG 2006). A small number of high street retailers may have doubts about going online in fear of cannibalizing their own in-store sales. The data shows that these retailers' worries are unjustified: their in-store sales are more jeopardized by other newly emerged pure players rather than by their own online channel. People who choose to buy things from the Internet are more attracted to pure players than to traditional high street retailers.

7.5.6 Respondents' Online Shopping Habits

Unattended Delivery

Forty-two percent of respondents said that there was normally someone at home during the day to receive a delivery. And 58% respondents said that normally no one was at home for the daytime delivery. When those who said that normally nobody was at home for the delivery were asked whether somebody had to take time off work to receive the delivery, two thirds said no. These figures suggest that more than half of the day time deliveries will either not be delivered for the first time or be left with other options unless people take time off to stay at home for the delivery. And as many as one third of daytime deliveries have to be delivered for a second time because some people can not or would not take time off. These figures are consistent with those of a home delivery study by Browne et al. (2001) for Freight Transport Association which suggest

that as high as 60% of home delivery of small items would be failed if no delivery time or date are arranged.

When asked about delivery time, 29.9% preferred delivery by arrangement. Twenty-three percent of respondents preferred morning delivery, i.e. 8 am –12 noon. Early morning delivery before 8 am or late evening delivery after 6 pm were also popular options. Few respondents seemed to enjoy late evening delivery after 8pm. Afternoon delivery and weekend delivery were not as popular as morning and evening delivery (see Figure 7.17). These results differ from the '@ Your Home research conducted in 2001 (Retail Logistics Task Force) where 34% of respondents favoured 6pm to 8pm time slot. Although both surveys are small-scale (n=317 for @ Your Home research), the comparison seems to suggest that people were getting more interested in early morning delivery and less interested in evening delivery.

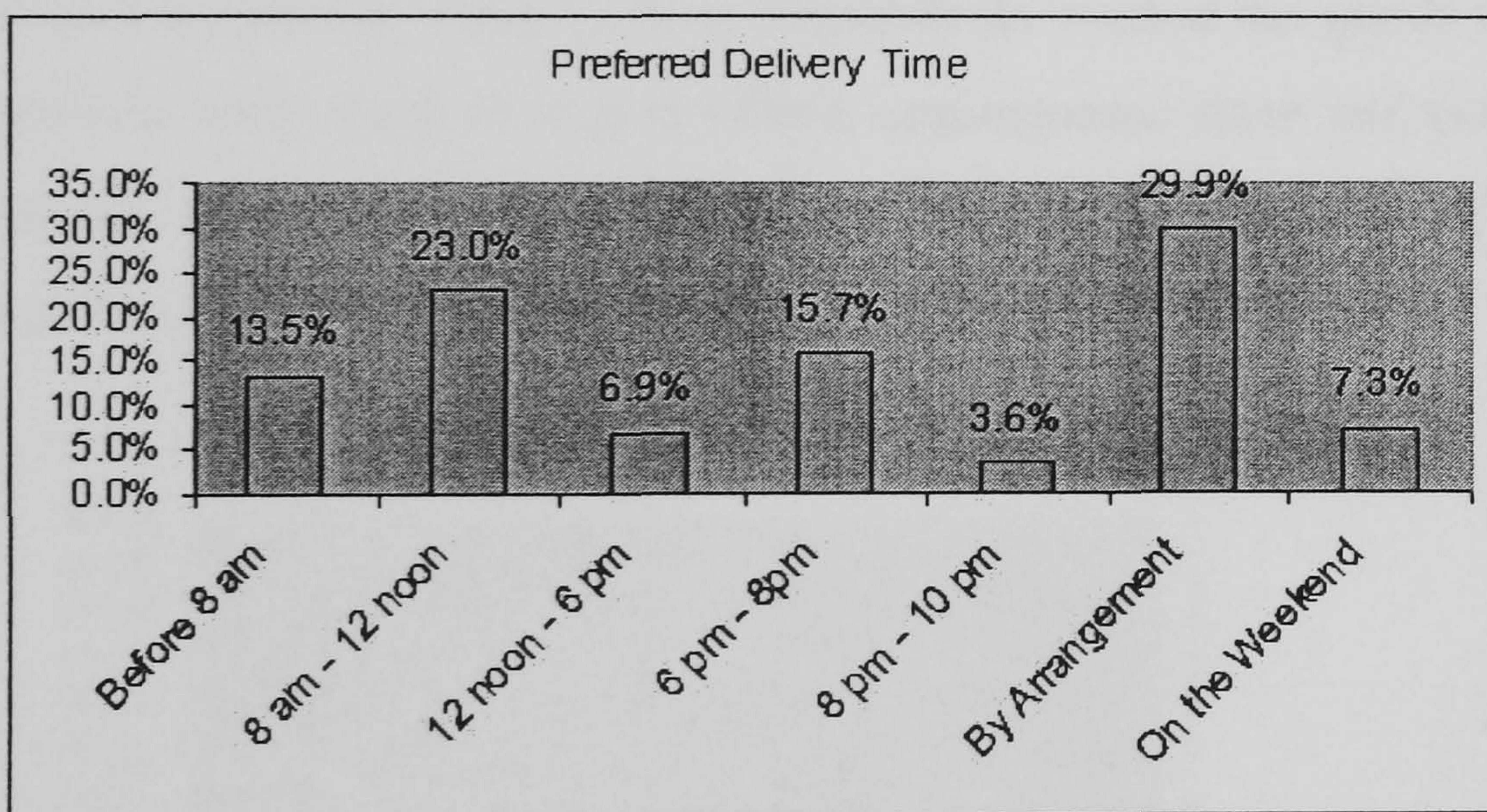


Figure 7.17: Preferred Delivery Times

Respondents then were told that weekend and evening delivery normally involved a surcharge and they were asked how much they were willing to pay for it. Figure 7.18 shows a similarity of attitudes respondents held towards weekend and evening delivery. More than half of the respondents were unwilling to pay anything either for weekend or evening delivery. Some 28% were willing to pay 1-2 pounds for weekend delivery and 30% for evening delivery. Slightly more respondents were happy to pay a premium for weekend delivery than for evening delivery. Respondents' attitudes may help explain why relatively few companies provide weekend and evening delivery. There is no

enough demand to achieve economies of scale and companies have to charge premium to cover high operating costs.

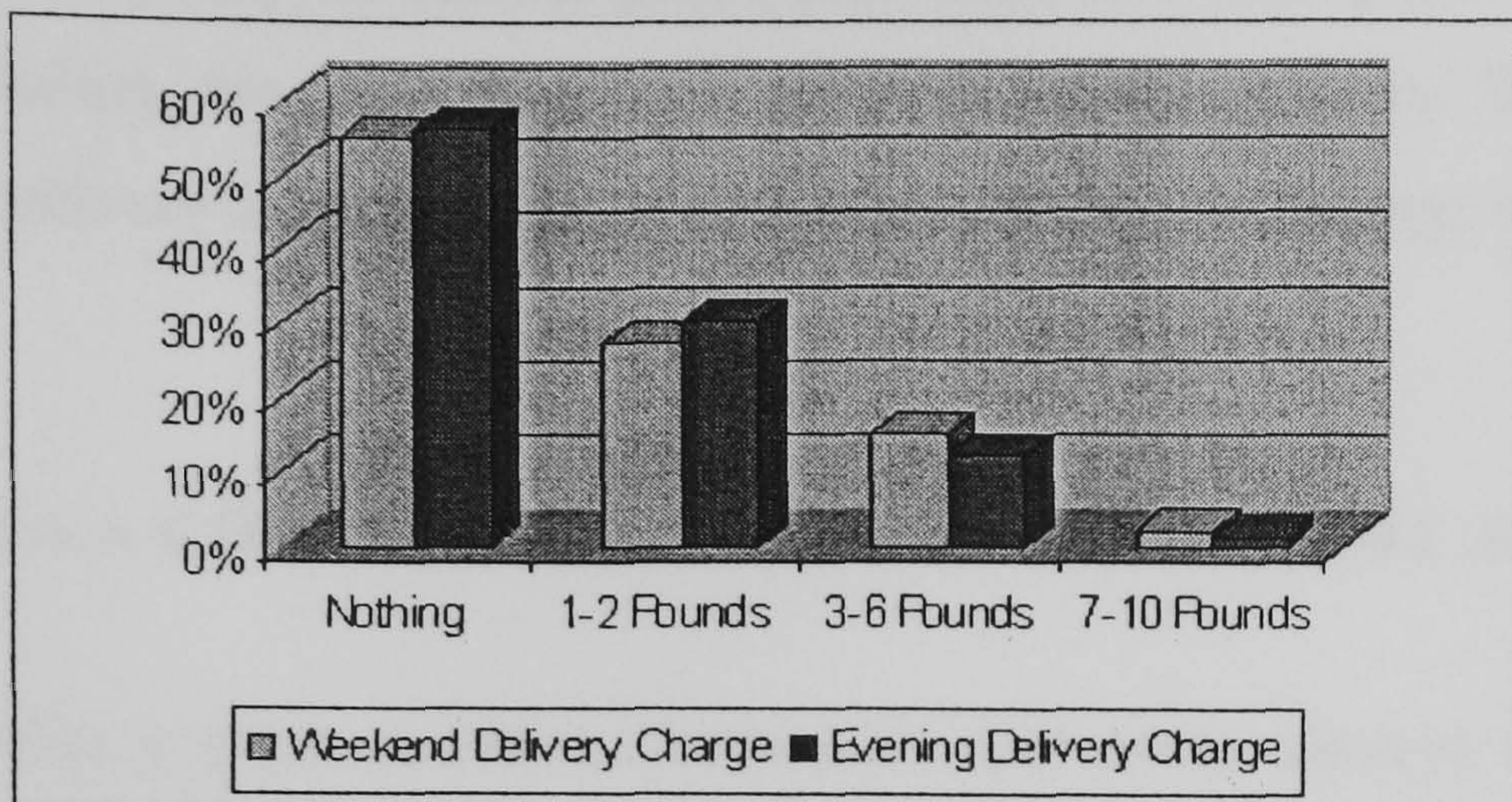


Figure 7.18: Preferred Weekend and Evening Delivery Surcharge

Then respondents were asked what would be their alternative choice if there was no-one at home to receive the delivery. Almost half of respondents chose to leave the goods with a neighbour. Then 22% of respondents wanted the goods to be delivered to a local pick-up point such as a post office, convenience store and petrol station. Twenty-one percent were happy to receive the goods in work place and 8.4% would like to arrange another delivery (see Figure 7.19).

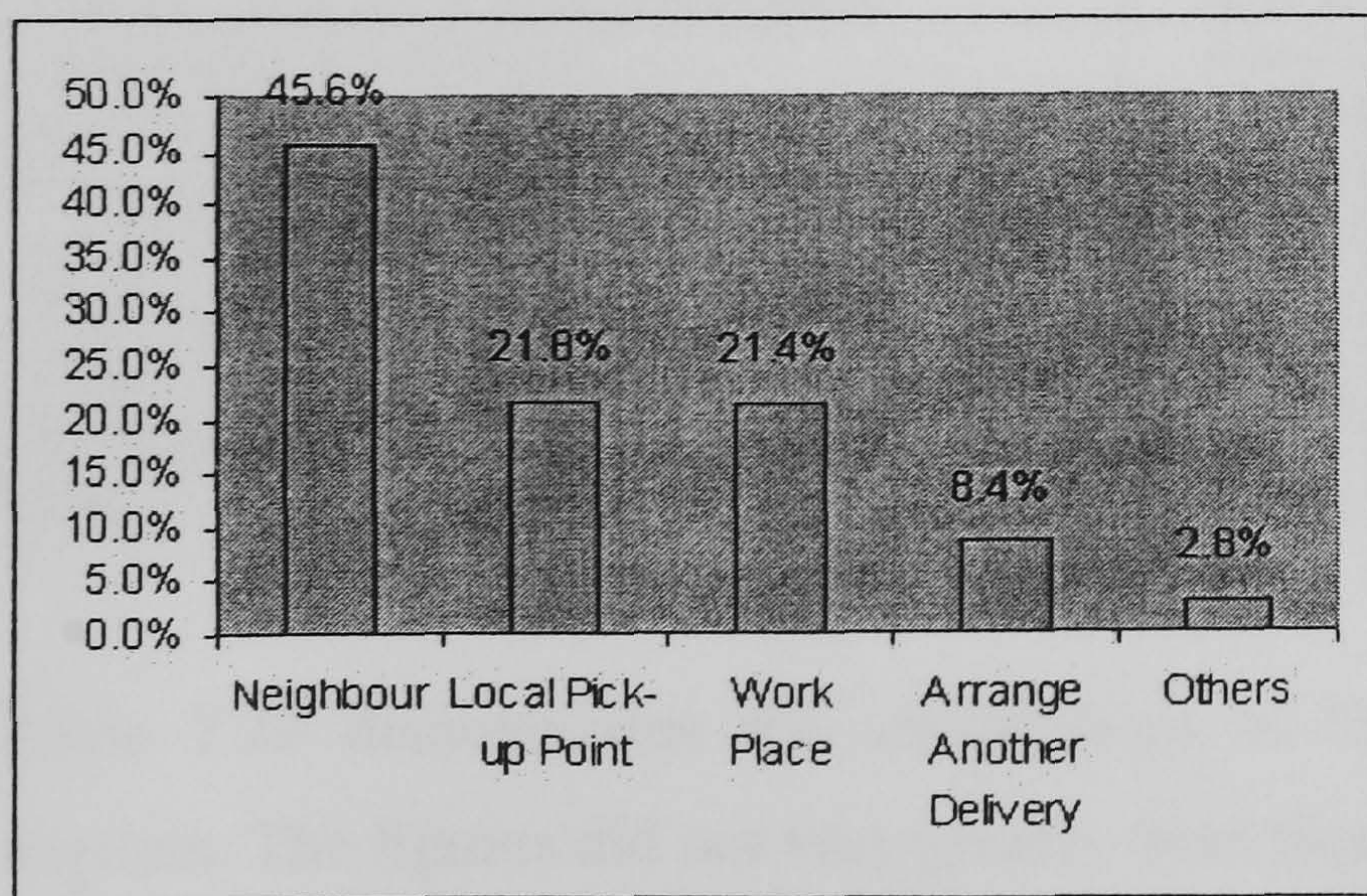


Figure 7.19: Alternative Delivery Place

In conclusion, daytime delivery is getting very difficult as more and more people are not at home to receive the goods. But not everybody is happy about evening or weekend delivery, let alone pay a premium surcharge for that. Many people prefer delivery by arrangement so they can be better prepared. As far as unattended delivery is concerned, most people's priority is to leave the goods to a neighbour. Work place and local pick-

up points as alternative delivery places are getting more popular. A quarter of respondents with household income over £50,000 preferred delivery to the work place, which may be further proof that ‘cash-rich time-poor’ people, who are likely to shop online, are unlikely to stay at home for the delivery. Thus how to achieve unattended delivery to consumers’ satisfaction will become a huge challenge for retailers.

7.6 A COMBINED ANALYSIS OF BOTH PILOT AND MAIN SURVEYS

This section combines both pilot and main surveys and briefly discusses the main results to see whether there are significant differences from the results of separated analysis. Table 7.28 shows the importance of variables, which resembles very much the result of main survey.

Variables	Total	Standard Deviation
Order Condition	4.93 (1)	0.273
Order Accuracy	4.87 (2)	0.353
Easy Return	4.59 (3)	0.602
Availability confirmation	4.59 (3)	0.670
Prompt Replacement of Returned Product	4.51 (5)	0.660
Delivery on the First Date Arranged	4.51 (5)	0.749
Specify Delivery Date	4.41 (7)	0.793
Prompt Collection of Returned Product	4.33 (8)	0.736
Ability to Deliver Quickly	4.30 (9)	0.779
Delivery in Specified Time Slot	4.28 (10)	0.883
Waiting Time for out-of Stock Product	4.27 (11)	0.864
Specify Delivery Time Slot	4.14 (12)	0.950
Order Completeness	4.12 (13)	0.923
Order Checking / Tracing and Tracking System	3.83 (14)	0.944
Alternative Offer	2.81 (15)	1.156

Table 7.28: The Importance of Variables of Combined surveys

Table 7.29 demonstrates the comparisons of the overall performance by different retailers. The figures did not vary greatly from those of the main study.

Type	Mean	Number	Std. Deviation	Minimum	Maximum
Multiple retailers	4.18	140	1.034	Very poor	Excellent
Pure players	4.43	413	.793	Very Poor	Excellent
Independent stores	4.29	21	1.007	Poor	Excellent
Primarily pure player (Internet+store)	4.55	31	.675	Poor	Excellent
Primarily pure players (Internet+catalog)	4.50	42	.834	Poor	Excellent
Manufacturer, wholesaler or distributor	4.45	29	1.021	Very poor	Excellent
Total	4.41	612	.846	Very poor	Excellent

Table 7.29: Comparisons of the Overall Performance by Different Retailers

Independent sample T-test was employed among various pairs of retailers and the results are presented in Table 7.30. Pure players performed better than both multiple retailers and independent retailers significantly. The difference is that no significant differences were found between manufacturers or direct sellers and pure players.

Two groups of Retailers	Significant Level
Pure players and multiple retailers	P=.000
Pure player and independent stores	P=.005
Primarily pure players (Internet + store) and multiple retailers	P=.023
Primarily pure players (Internet + store) and independent stores	P=.005

Table 7.30: Significant Means Differences among Various Groups of Retailers

Retailers' performance in the variables is summarized in Table 7.31. Independent T-test was conducted and significant differences between multi-channel retailers and pure players existed in three variables: availability confirmation ($p=0.002$), order tracing ($p=0.001$) and order accuracy ($p=0.000$). This result is exactly the same with that of the main survey.

Variables	Multi-channel retailers			Pure players		
	Number	Mean	Standard Deviation	Number	Mean	Standard Deviation
Availability confirmation	31	4.71	.529	193	4.57	.768
Alternative offer	20	3.50	.827	83	3.53	1.141
How long to wait if out-of-stock	12	4.08	.793	51	3.94	1.085
Specify delivery date	29	3.90	1.145	178	4.05	.999
Specify time slot	15	3.13	1.187	67	3.13	1.413
Order checking	26	3.27	1.43	162	4.01	1.009
Delivery on the first date arranged	27	3.96	1.224	148	4.37	.942
Delivery in time slot	23	3.35	1.191	102	3.88	1.171
Quick delivery	16	3.81	1.223	117	4.21	1.055
Order accuracy	32	4.47	.983	193	4.85	.471
Order condition	32	4.72	.581	190	4.82	.527
Order completeness	21	4.24	1.261	110	4.50	.936
Easy return	17	3.82	1.131	59	4.10	.885
Prompt collection	8	3.38	1.188	21	3.38	.669
Prompt return	6	3.33	1.366	23	3.26	.915

Table 7.31: Comparison of Means of Variables between Multi-channel and Pure Players

Correlation tests were conducted and hypotheses developed to find out how order value, order delivery charge and product category influenced respondents's perceptions of e-PDSQ. No significant correlations were found between order value and e-PDSQ or between product category and e-PDSQ. However, order delivery charge was found to be negatively correlated with e-PDSQ with a coefficient value $R = -0.116$ at a significant value of $p = .033$ (Coefficient was significant at the 0.05 level one tailed). The correlation coefficient squared (R^2) is "a measure of the amount of variability in one variable that is explained by the other" (Field 2000 p.90). In this case, R^2 could be used to tell how much of the variability in e-PDSQ could be explained by order delivery charge. The result means that delivery charge accounted for 1.35% ($R^2 = 0.0135$) of the variability in e-PDSQ. To put this value into perspective, this leaves 98.65% of the variability still to be accounted for by other variables.

7.7 CONCLUSION

This chapter discussed the consumer side of the empirical study, which represents the two-stage methodology of the Churchill framework detailed in Chapter Six. The pilot survey tested the questionnaire and validated the e-PDSQ framework. The main survey

tested the improved e-PDSQ framework with three added variables. The consumer side of empirical study answered the first, second and part of the fourth research questions:

RQ1: The surveys validated the original framework and improved it which includes four dimensions and fifteen variables. The finding of the five most important variables is in line with the literature. Consumers' choice of confirmation of availability as the most important variable reflects their unwillingness to wait and intolerance with out-of-stock. If they cannot find what they want on the first-choice site, they can easily turn to other retailers. Order accuracy is considered to be the "backbone of repeat business" (Tarn et al 2003 p.355) and it appears on the top list of consumers' concern. Order condition is also important in reflecting retailer's reliability. Respondents' concern of unattended delivery is reinforced by making choice of delivery date and deliver on the first date arranged within the top five variables.

Royal Mail's home delivery research (cited from Parr-Davies 2006) investigated factors that would encourage respondent to home shop a lot more. Figure 7.20 shows that five out of twelve reasons listed by consumers are delivery related including the first one 'reliable delivery' and the third one 'easy returns'. 'Reasonable delivery charges', 'be able to choose delivery options' and 'speedy delivery' are also included.

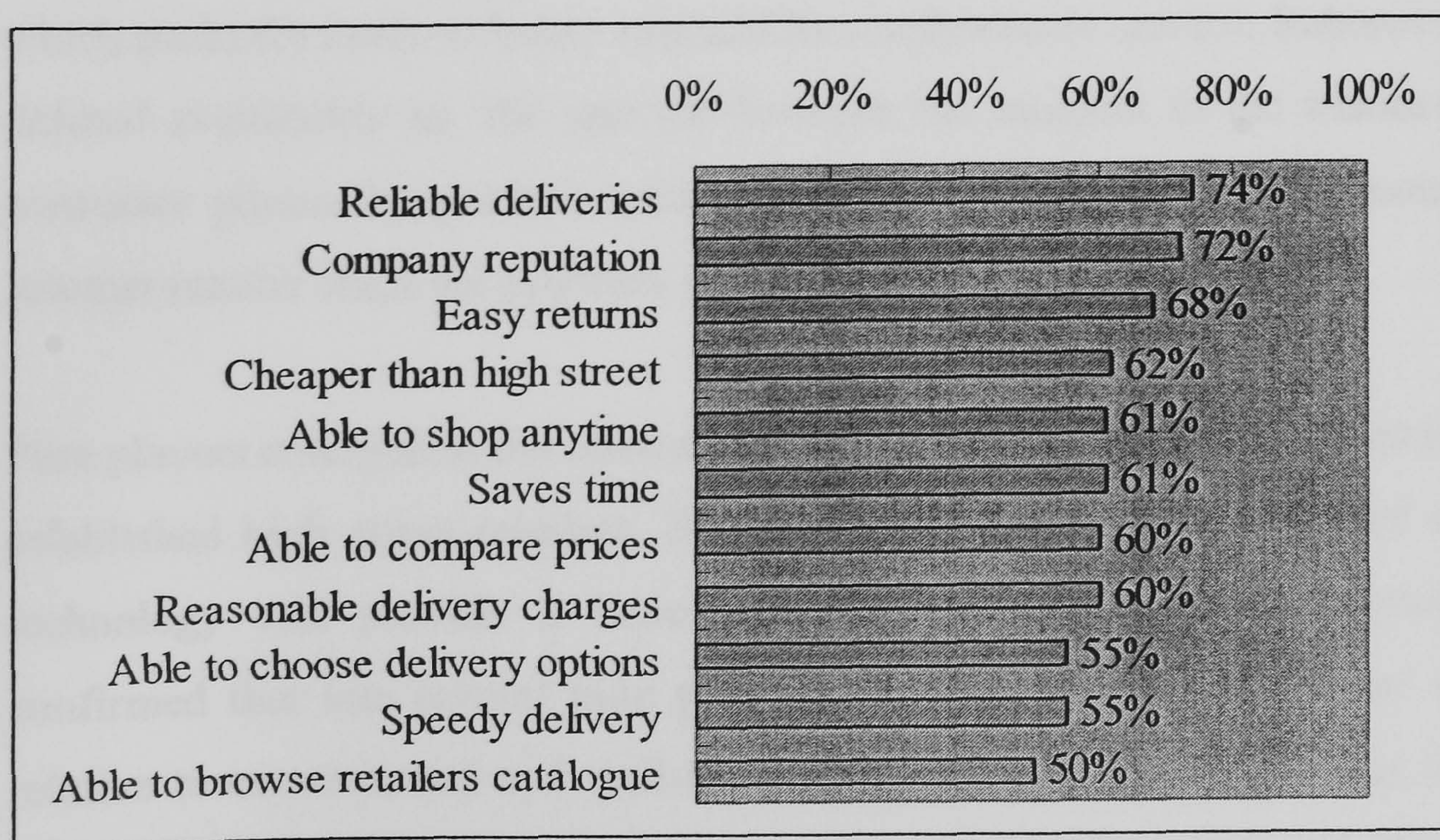


Figure 7.20: Factors That Would Encourage Respondent to Home Shop a Lot More

(Source: Royal Mail, cited from Parr-Davies 2006)

Alternative offer is the least important variable. Unlike groceries, which are inexpensive and highly replaceable, non-food products are normally of high value and harder to replace. When consumers cannot find what they want from one website, they are more likely to switch to another website than accept a substitution offer. Retailer's ability to inform how long the consumers shall wait for an out-of-stock product may be important in retaining a consumer and influencing his or her decision.

RQ2: The analysis found significant overall e-PDSQ differences between pure players and multi-channel retailers. Pure players were perceived to have performed better. Statistically significant differences existed in three variables: availability confirmation ($p=0.001$), order tracing ($p=0.026$) and order accuracy ($p=0.009$). Multi-channel retailers did better in availability confirmation, while pure players did better in order tracing and tracking and order accuracy. Timeliness has the strongest correlation with the overall e-PDSQ perceptions. On-time delivery and short order lead time led to high consumer satisfaction. Proper handling of returns also enhanced positive e-PDSQ perception.

These findings are 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. Rabinovich and Bailey defined availability as 'the interval between the moment in the transaction when the consumer places the product order to the Internet retailer and the moment when the Internet retailer ships the products to the consumer' (p.659).

Pure players emerged in the Internet era and entered the retailing market later than well-established high street retailers. They are more likely to be equipped with the latest technology and provide a better order tracking service. Rabinovich and Bailey confirmed that late entrant pure players exhibited superior timeliness and reliability, relative to conventional and well-established retailers. Timeliness was defined as 'the interval between the moment when an order ships to the buyer and the moment when the buyer receives the order' (p.660). High inventory availability would be reflected in a low click-to-ship time measure (despatch time) and superior timeliness in low ship-to-deliver time (transit time). They argued that multi-channel retailers had access to

various distribution sources to achieve economy of scale and late entrant pure players tended to rely more on PDSQ to build up their brands.

RQ4: Some possible factors identified in the literature that may have influenced e-PDSQ were tested. Hypotheses were developed but no significant correlations were found between order value, delivery charge, product category and e-PDSQ. However in the combined surveys analysis, delivery charge was found to be negatively correlated with e-PDSQ but it accounted for only 1.35% of the variation in e-PDSQ.

Rabinovich and Bailey (2004) studied the effects of PDS price (i.e. delivery charge), order size and order net price on e-PDSQ. They found that order size and order net price negatively affected timeliness, but delivery charge positively affected timeliness. Their sample was very big (n=808) but this study's sample was much smaller (n=161) which may have resulted in the differences. Also Rabinovich and Bailey's study was based on the US rather than the UK.

Thirumalai and Sinha (2005) investigated the relationship between consumers' satisfaction of order fulfilment and product type. They found that consumers have higher expectations of specialty goods, which are expensive and time sensitive. Therefore retailers should customize different approaches to fulfill orders of different product types. Retailers need to identify the higher expectations of the order fulfillment of specialty goods and allocate resources to achieve that. Commodity goods are less expensive and should be delivered with less charge and in a way affordable for consumers.

The next chapter will start to discuss the interviews from the supplier side which will answer the third, fifth, sixth and part of the fourth research questions.

CHAPTER EIGHT: THE E-PDSQ PERFORMANCE FROM RETAILERS' AND LSPS' PERSPECTIVES

8.1 INTRODUCTION

Chapter Eight, Nine and Ten discuss the results of company interviews, which focus on the supply side of the B2C e-commerce marketplace. Retailing companies and LSPs were interviewed to gain more insights into the home delivery market. This chapter answers the third and part of the fourth research question. Firstly the interview instrument and process are introduced which also apply to Chapter Nine and Ten. Secondly the actual home delivery performance from the retailers' and LSPs' perspectives is described based on the e-PDSQ framework. Thirdly the challenges of traditional retailers' transformation into multi-channel are examined. Finally more factors which may contribute to the e-PDSQ differences between multi-channel and pure players are examined.

8.2 INTERVIEW INSTRUMENT AND PROCESS

8.2.1 Interview Samples and Questions

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. There were closed as well as open 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 (Appendix Five). The first section consisted of a few questions regarding retailers' retailing proposition and their online channel's development. Retailers were asked why, when and how they started online channel and what their overall online strategy was. Section 2 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. Section 3 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. Section 4 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. They were asked to provide the figures in percentages for specific questions in their performance. Their views on unattended delivery options were also discussed. Section 5 asked a few general and exploratory questions in cost, e-fulfilment and the home delivery market. They were asked to specify the key determinants of cost-to-serve and the biggest constraints or problems with e-fulfilment. They were also asked to comment on the current home delivery market, especially on the efficiency, quality and differentiation in the services provided by LSPs.

The interview questions for LSPs were divided into three sections (Appendix Six). Section 1 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. They were informed of the consumer survey results, i.e. pure players were perceived to have better e-PDSQ than multi-channel retailers. And then they were asked to comment on this result. Section 2 had detailed questions related to LSPs' home delivery operations again in terms of availability, timeliness, condition and return. Their opinions on issues such as unattended options and home delivery challenges were also invited. Section 3 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 (one example shown in Appendix Seven). 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 sought:

- 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;
- The unattended delivery solution.

8.2.2 Interview Process

The interviews were first piloted on one retailer and one LSP in November 2005. The two interviewees have close relationships with the Logistics Research Centre of Heriot-Watt University and are renowned players in the market. The retailer is one of the UK's top ten retail businesses. The LSP has international distribution infrastructure and is a big player in the UK home delivery market. The questionnaires proved to be effective and minor changes were made to make the questions more standardised.

Next 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 (Appendix Eight) were sent out to those potential interviewees. In the letter, the author explained the purpose of the undergoing home delivery study and asked people to contribute to this study so better e-PDSQ could be provided to consumers. The interviewees were promised a copy of the result of the consumer survey if they agreed to participate. They were guaranteed the strictest confidentiality. All data would be analysed anonymously and no individual company would be identified.

Fourteen companies responded and agreed to be interviewed. Phone calls and emails were made to agree on a time and place. The interviews were conducted over a two-month period commencing at the end of January 2006. Consequently, a total of 16 interviews (including two pilot companies) were conducted, with six interviewees from retail companies, seven from logistics companies, one from an e-fulfillment software company, one e-fulfillment journal editor, and from an industry body. The sample of retailing companies covered a few industry sectors in apparel, household products, DIY,

office supplies and department stores. 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 background. As to the interviewees from the logistics side, 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.

Full notes of the first two pilot interviews were taken and then transcribed immediately afterwards. All the other interviews were tape recorded and transcribed. Three interviews were conducted over the telephone, and thirteen others were face to face interviews. The author went to the interviewees' companies to see them. One company was based in Scotland and the rest were all based in England. Each interview lasted between 45 to 120 minutes. 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.

This technique generated a rich source of data containing details of companies' operations, strategies and perceptions. 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.

Due to confidentiality the interviewees are coded for data analysis (see Table 8.1). LSP1, LSP2 and LSP3 mainly focus on system design, warehousing and trunking. They tend to outsource the downstream last mile deliveries to other carriers. LSP4, LSP5, LSP6 and LSP7 deliver large volumes of parcels to consumers and are also called carriers.

Code	Type of the Company	Title of the Interviewee
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	A industry magazine in e-fulfilment	Editor

Table 8.1: Coding of the Interviewees

The following sections will discuss the interview results based on the identified themes. The actual home delivery operation and performance of retailers are described. Traditional retailers' challenges and different retailers' relative advantages are examined.

8.3 THE HOME DELIVERY SERVICE FROM RETAILERS' PERSPECTIVE

8.3.1 Availability

Level of Availability

Many companies inform consumers of the availability of the products before they place an order. The availability of products varies significantly among product category as is shown by Table 8.2.

Retailer Code	Actual Availability	Product Type
RET6	99.5-100%	Office stationery and household products
RET2	99%	Home improvement and garden centre
A Client of LSP2	97%	Toys and child care products
RET1	95%	General merchandise
RET5	85%	Clothing

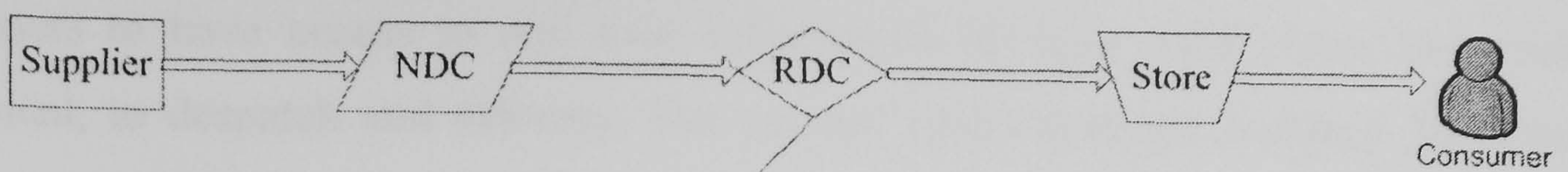
Table 8.2: The Product Availability Rate of the Interviewed Companies

The table shows that office supplies and household products have the highest availability rate. For clothing retailers, the availability is much lower. Eighty-five percent is the clothing industry average but it can be a lot worse for some product lines. The demand of fashion products is less predictable and many clothing companies are supplied by factories in Asia which results in a longer order lead time. The real-time information of stock availability is so important that RET5 updates the stock availability every 15 minutes. Even that can pose a problem as the product may go out of stock when a consumer places an order. RET5 is currently developing a new system and hopes to make the availability more transparent and reflect real time information in the near future.

It is quite common for the multi-channel retailers within this sample to separate the store replenishment supply chain from home delivery completely. RET1 and RET2 do not share stocks between deliveries to stores and to consumers. They consider the service requirement is very different and they want to be more accurate when picking up home delivery products. They normally have one or more central warehouses across the country for home delivery purpose only, but they do not differentiate whether the orders for home delivery come from the Internet, telephone or store. All the orders come into the same central processing system without distinction. RET1 said, “In terms of home delivery operations, it doesn’t matter what the sales channels are. All the stocks are in the same warehouses.”

Another main strategy for multi-channel retailers who deal with a broad range of products is to further divide the home delivery channel into ‘two-man’ products channel and ‘one-man’ products channel. Two-man products such as furniture are heavy and bulky and need special handling. One-man products are delivered in forms of parcels. The following figure demonstrates how these retailers separate store replenishment supply chain from home delivery system and combine own fleet with LSPs and carriers.

Store Replenishment System



Home Delivery System

Two Men Product
Unavailable in Store

One Man Product
Stocked in Store

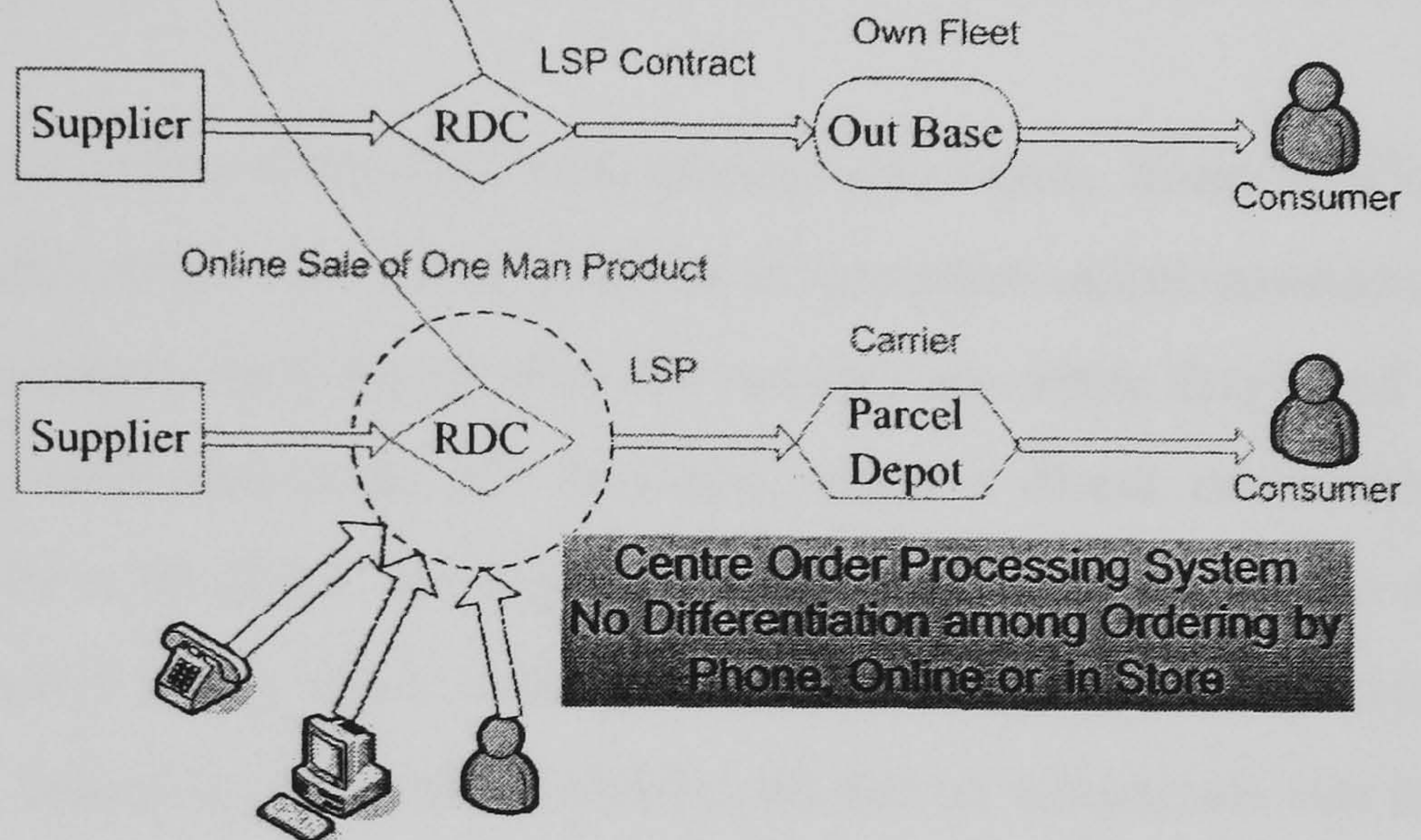


Figure 8.1: Multi-channel Retailers' Store Replenishment and Home Delivery Systems

Most retailers have certain SKUs that they do not stock and these products are sourced from suppliers directly to consumers. These products tend to be big and bulky, needing special handling. Or they can be personalised products. The interview results show that less than 10% of retailers' total SKUs are categorised as direct supplies. Retailers simply pass the orders to the suppliers who then do the delivery. Retailers do quality check on these suppliers and get regular report. If things go wrong, consumers still hold retailers responsible as products are ordered from them.

Direct sourcing can pose a problem to carriers as they have to go to more premises to pick up orders. LSP5 said: "We collect parcels from one premises to another. The hardest aspect is customers who use direct dispatch from manufacturers and suppliers. We have to go to multiple warehouses across the country to collect and it is not very cost effective (as opposed to go to one warehouse)."

Order Tracking And Tracing

Order tracking and tracing system is a service provided by retailers or carriers for consumers to have access to real time information of their order status from order placement, to despatch and delivery. The system varies amongst retailers. Most pure Internet players allow consumers to check the order status online or lead consumers to their carriers' website. On the contrary, many multi-channel retailers do not have the online tracking system in place yet and they tend to use call centres to help consumers trace parcels. Many of them are developing such a system so to save costs in call centres.

The degree that retailers share orders status data with carriers also varies. Some retailers do not tell consumers who the carriers are. They hold the information unless consumers ask them. RET3 said: "Consumers only know who the carriers are when they need to know. For example, in attended deliveries for furniture, when a direct relationship between consumers and LSPs is involved, we will tell consumers who their carriers are and what they should expect." Some other retailers lead consumers to the carriers' website. LSP6's website is linked to those of its retailer clients so consumers can use the consignment number, reference, or order code to check their order progress.

Premium carriers are equipped with more advanced tracking and tracing system than non-premium carriers. RET5 is currently using a carrier which is mainly paper and manual based so there is little electronic integration. The retailer feels a more rigorous system is needed to catch up with consumers' requirement. Thus carriers using very basic manual systems may need to invest in upgrading into electronic order tracking systems.

8.3.2 Delivery

Delivery Options

Although most carriers provide a broad range of delivery options from express delivery (same day, next day or named day delivery) to standard three to five days delivery, it was unanimously agreed by both retailers and carriers that standard delivery was the most common option which accounted for at least more than 50% of all deliveries (except for retailers who offer express delivery only). One reason that few delivery

options were offered is because most consumers want consistency and reliability of delivery rather than the speed. LSP1 explained “Whether it is next day or five days does not matter too much. Consumers want to know when it is going to be delivered and whether the promises are met.” The second reason is that there is a huge cost difference in providing standard delivery and next day delivery which is reflected in the pricing system. If the delivery is not urgent, consumers may choose the cheapest delivery option. The Edinburgh consumer survey showed that 53% of consumers paid nothing for their deliveries. The third reason is that offering multiple delivery options may cause the complexity of retailers’ systems and make it difficult to control.

The interviewees also mentioned other delivery options: some are getting more popular while others have not taken off yet. Table 8.3 summarizes these new trends.

Delivery Option	Interviewee	Notes
Next day	IND1 LSP2	Cash rich and time poor people want commitment and are willing to pay more for convenience as they do not want to take the day off for delivery; accounts for LSP2’s 15% of total volume
Pre 9.30am	SOT1	Popular for working people
Early morning	LSP3	Accounts for 20% of LSP3’s total volume
Weekend	LSP4 LSP2	Off-time delivery costs too much; some consumers want it but unwilling to pay; accounts for less than 1% of LSP2’s volume
Evening	LSP5 LSP7	Expensive and consumers unwilling to pay; but is a main focus for LSP7 for further development
Name day	LSP5	Treated as next day delivery and orders are picked and dispatched on the day before delivery

Table 8.3: The New Trend of Delivery Options

The general trend is that apart from the most common standard delivery method, LSPs and carriers offer a few other options to improve the first time delivery success. Morning and next day delivery are getting more popular. There are demands for weekend and evening deliveries but they have not taken off yet. LSP4 suggested that it was very flexible and would do anything on request. But it costs too much to do over time delivery. LSP5 said their customers wanted evening and Saturday delivery but unwilling to pay for them. LSP5 normally starts to deliver in mid day till 8pm to catch the first delivery rate. It plans to do more Saturday delivery in a hope that more people stay at home in weekend. LSP7 specializes in evening delivery and plans to expand this operation further.

LSP5 is an express parcel carrier but even so the most common deliveries it does in the B2C market are two to five days standard delivery. It is so good at express delivery that it actually provides next day delivery for two to five standard delivery. It does not want to hold parcels for a few days. Some retailers take this advantage and pay the carrier standard delivery fee while promising next day delivery to consumers as they know they will deliver the majority of parcels next day.

Delivery Timeliness

Delivery timeliness means delivering on specified day or time slots. It is a crucial factor in evaluating delivery performance. Delivery timeliness is affected by product category (two-man product or parcels), vehicle route planning, order availability, seasonality, charges and delivery options etc. Table 8.4 summarizes how retailers, LSPs and carriers perform in terms of timeliness based on self-assessment.

Interviewees	Timeliness Performance
LSP1	Target at 95-98% and require carriers to reach this service standard
LSP5	Target at 98% but can achieve 93-94%
LSP2	One of its main carriers can achieve 93%
LSP4	Achieve 99% for specialised two-man products
RET1	Achieve 98% of two-man product delivered by in-house fleet
RET2	Achieve 97% for both two-man and one-man products
RET5	Achieve 95% for clothing products delivery

Table 8.4: The Interviewees' Performance in Timeliness

Two-man products have slightly higher timeliness rate than parcels as these products are more likely to be sent in a dedicated van, or in a van which does only a few drops per trip. The two-man products delivery is also very expensive and it is to the carriers' own interests to deliver in time. Peak period such as Christmas adds difficulty in home delivery especially in terms of availability and timeliness. LSP1 said that some of its clients may dispatch fifteen times in Christmas as much as usual which make it difficult to comply with the deliver promise. Good vehicle route planning also helps delivery vans to deliver in time.

The First Time Delivery Success Rate

The first time delivery rate strongly influences delivery costs and profitability. Profit margin in the home delivery market is very thin so improving first time delivery is

crucial. IMRG (2006b) reported that 12% of e-retail home deliveries would be first time delivery failures, i.e. 65 million of the 540 million total. Table 8.5 summarises the interviewees' first time delivery success rates.

Interviewee	First Time Delivery Success Rate
LSP5	80% for parcels
LSP4	95% for two-man products
LSP3	98-99% for a computer retailer
RET5	80-90% for standard clothes delivery including those sent through letter box; 97% for special delivery; 89% on average for the apparel industry
RET2	99.6% for two-man products by its in-house fleet
RET3	93% on average for various products including the use of local couriers
RET6	99.6% for office supplies and the retailer only offers same day or next day delivery

Table 8.5: The Interviewees' First Time Delivery Success Rate

The table shows that parcels have lower first time delivery rate than two-man products and high value electronic products as there is usually a time window for these products. The communications between retailers and consumers are closer when transactions involve high value products. Consumers get phone calls, texts or emails to confirm the delivery date and time. Most parcel carriers do not offer a delivery time window for parcels except for big or high value products, which are normally delivered with an am, pm or early evening time window. Also consumers are more likely to stay at home for these deliveries as they pay higher charges.

Express delivery methods have higher success rate than standard delivery method. It is reasonable to assume that some consumers who choose express delivery buy goods on an urgent basis and are ready to stay at home and receive them. RET6's example shows that people tend to stay at home for the same day or next day delivery. So the shorter the order lead time is, the more likely that the delivery success rate is high. Quick delivery and delivery within a time window improve first time delivery rate.

The use of local couriers also helps as they know local people better and only get paid when they deliver a parcel successfully. Not only retailers but also carriers explore the advantages of local couriers, which can improve first time delivery rate significantly and is very attractive from a cost perspective.

The majority of carriers would deliver twice and some would deliver up to three times. All the carriers in this sample do not charge consumers for redelivery; they charge retailers. And sometimes the redelivery charge is built into the commercial contract. Metapack (2005) reported that the cost of redelivery is included in the agreed parcel rate in 79% of cases. But it still costs the carriers money to redeliver. If redeliveries fail again, parcels are sent back to the local customer service centre or depot for people to collect. IMRG (2006b) indicates that 2% of e-retail home deliveries will be undeliverable and returned to suppliers.

A few companies mentioned the issue of signed delivery. Snow Valley (2005) reported that at least 28% of the retailers they studied required signature delivery. LSP1 thought signature delivery could create more problems than it could solve. "Signature is only worth when it is high value goods. It costs too much for the majority of products."

Metapack research (2005) showed that first time delivery failure costs include: redelivery, leaving a card for the customer, managing incorrect addresses, issuing credit notes and managing depot collections. Thus improving first time delivery rate has a positive impact on companies' cost and profitability.

Unattended Delivery

The most common option to solve unattended problem is to leave the goods with a neighbour so no second or third delivery attempt is needed. A card is then left to tell the consumer to pick up the parcel from the neighbour. Many companies also offer to deliver to people's working address, an option consumers can take at the time of order. The billing address does not have to be the delivery address. RET6 requires goods to be delivered to the invoice address if a new customer makes the first purchase. It is more a security check. After that, it gives consumers options and delivers to any addresses required by them.

Some carriers may adopt the door-stepping approach, leaving the goods at doorstep, garage or garden, a practice that may or may not be approved by retailers. Before delivery, RET4 normally asks consumers for their unattended delivery preferences to see whether they allow the retailer to leave the goods with a neighbour, or use other options. So as long as consumers pre-approve, it uses all the options. When talking

about the unattended policy, LSP5 said: “we have agreement with only one customer on unattended delivery policy; they give us permission to leave the parcel unattended. And if a delivery goes missing, they will pay for it.” This carrier does not leave goods unattended when doing delivery for other customers. Another issue is if a parcel needs to be signed for, it is not supposed to be left outside.

8.3.3 Order Condition

Order Condition and Damage Rate

Order damage is common in delivery but the damage rate varies among product category. Furniture has the highest damage rate. Furniture delivery is very difficult and sometimes one furniture delivery involves 125 SKUs. Parts of furniture can be missing or damaged. RET2 said that they had 1% of unit damage and 5% of order damage. Damage is a big problem for them. On the other hand, RET6 has only 0.03% of damage rate of office supplies, which has to do with the nature of product. RET5 said it was very rare that the clothes would be damaged. The proportion is tiny. Most carriers think the damage rate is very low. Some damages may be caused by inappropriate packaging or redelivery as some packages can not sustain a second delivery. So quality packaging and first time delivery success are crucial to reduce damage rate.

When damage does incur, many companies have insurance to compensate their losses and they will replace the damaged products. RET2 said: “If the order value of the damaged product is not too big, we will just send the product again without arguing with the consumer or collecting the damaged one.”

Order Completeness

When consumers order more than one item online, most retailers combine all the items at one delivery. RET1 only delivers orders when all the items are available and there are no back orders, except products delivered directly by suppliers. The items may be put into one or several parcels or packages depending on the size and weight of the items. LSP2 said there were 1.2 parcels per order on average. RET2 adopts a different approach from RET1. It delivers the items that are available immediately and provides a ‘back order’ of the other items when they become available. However, due to damages

and replacements about 20% of orders RET2 delivers are second deliveries. Fashion companies are slightly different as they have the highest stock-out rate. They normally ship what they have in stock by the time the consumer places an order, which means a second or third delivery is needed when stocks are available. Thus the policy on delivery of partial orders may be product-specific.

Redeliveries and back orders have high economic implications as it erodes companies' profits. But if retailers let consumers to wait to send the goods all at once, consumers may be unsatisfied at the long lead time. Improving availability is a solution but it costs money to stock products and manage inventory. Accurate sales forecasting is the key.

Missing items may also cause a second delivery. If consumers claim not to have received the order, retailers may despatch a second order after a few days.

To get a deeper understanding of the root causes of home delivery failures from all the four aspects of the e-PDSQ framework, Figure 8.2 is cited which depicts the root causes of failure by a large multi-channel retailer selling houseware and DIY products. The fishbone figure demonstrates that failures could be caused by various reasons and by any party: retailers, LSPs or consumers. For example, missing can be caused by inaccurate sorting in the warehouse, inaccurate route planning and lack of tracking systems. It is important for companies to find out where can go wrong and fix them effectively.

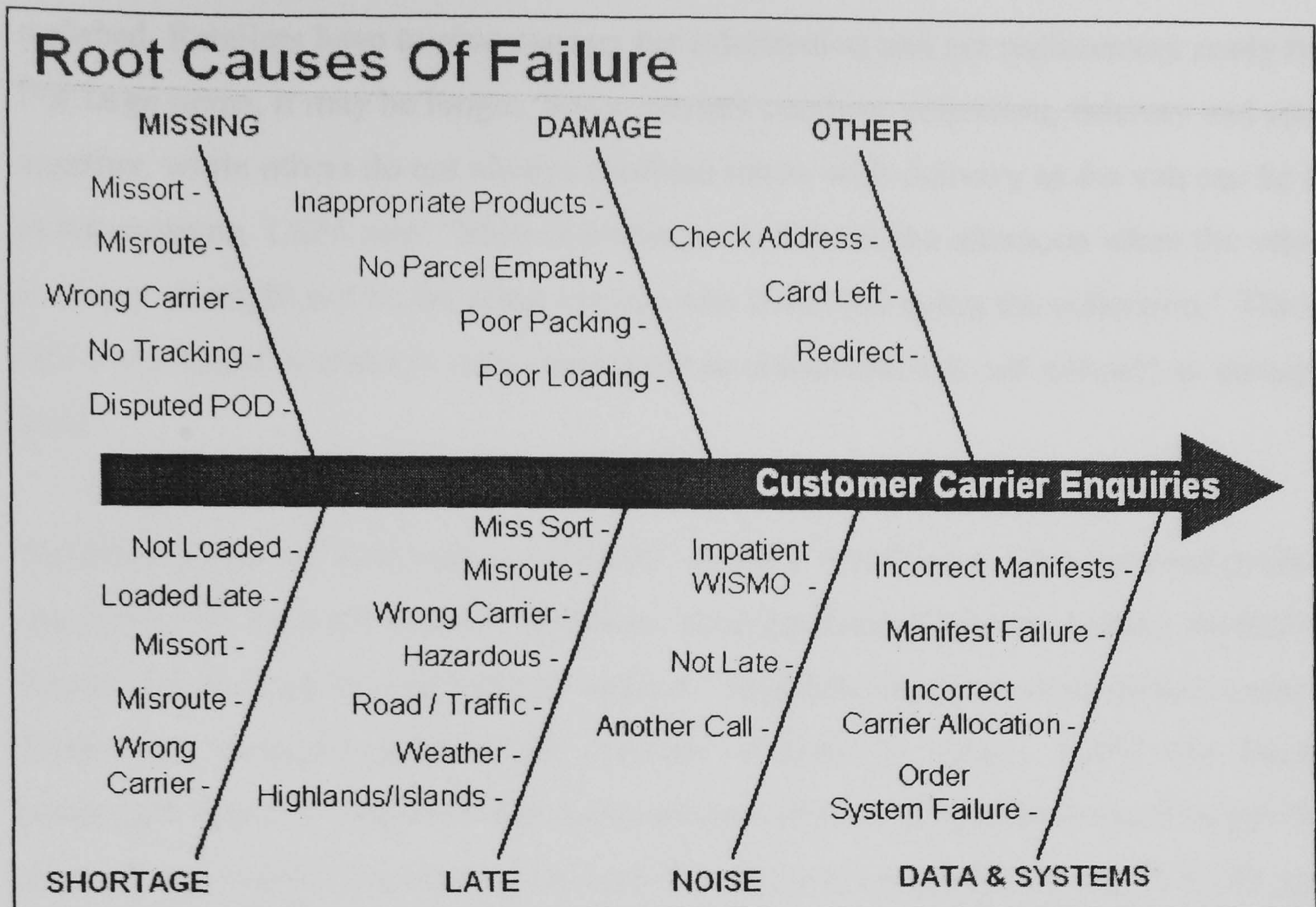


Figure 8.2: Root Causes of Home Delivery Failures

(Source: Ritchie 2006 p.4)

8.3.4 Return

Return System

Some products may be faulty or damaged upon arrival and need to be returned or replaced. In other cases, consumers may just change their minds and do not want the products. Reverse flow is a critical component of the fulfilment process and poses additional challenges. There are two common ways for returning small items. Consumers can either arrange the goods to be collected by the retailer's carrier, or take it to the post office and send it back to the retailer. Large items are normally collected from consumers' houses by retailers or carriers. Some retailers provide pre-paid labels for consumers as an incentive. Faulty and damaged products are normally returned and replaced at retailers' expense. Sometimes consumers have to pay for the return if they simply do not want the products.

How promptly retailers collect and replace returns often depends on the consumers or how soon carriers are contacted. Small items normally take a week to be collected and

replaced. Retailers have to give carriers the information and get replacement ready first. For large items, it may be longer. Some carriers combine collection, delivery and return together, while others do not always combine return with delivery as the van can be full in the morning. LSP5 said: “Most collections are done in the afternoon when the vehicle is empty. It might not be the same vehicle who delivered doing the collection.” The use of locally based couriers is very convenient as consumers can call couriers to arrange a time.

Returned goods are sent back to retailers’ or LSPs’ warehouse. How returned products are dealt with depends on their condition. Some products might be cleaned, treated and resold. Others may be sent back to retailers’ suppliers based on commercial contracts. Faulty and damaged products are disposed or given to charity. LSP2 who handles returns for retailers suggested that eighty percent of returned products could be put back to stock and resold after some treatment. For the rest unsuitable for resell, LSP2 gives them to charity or have them destroyed. Figure 8.3 shows the general return and replacement process.

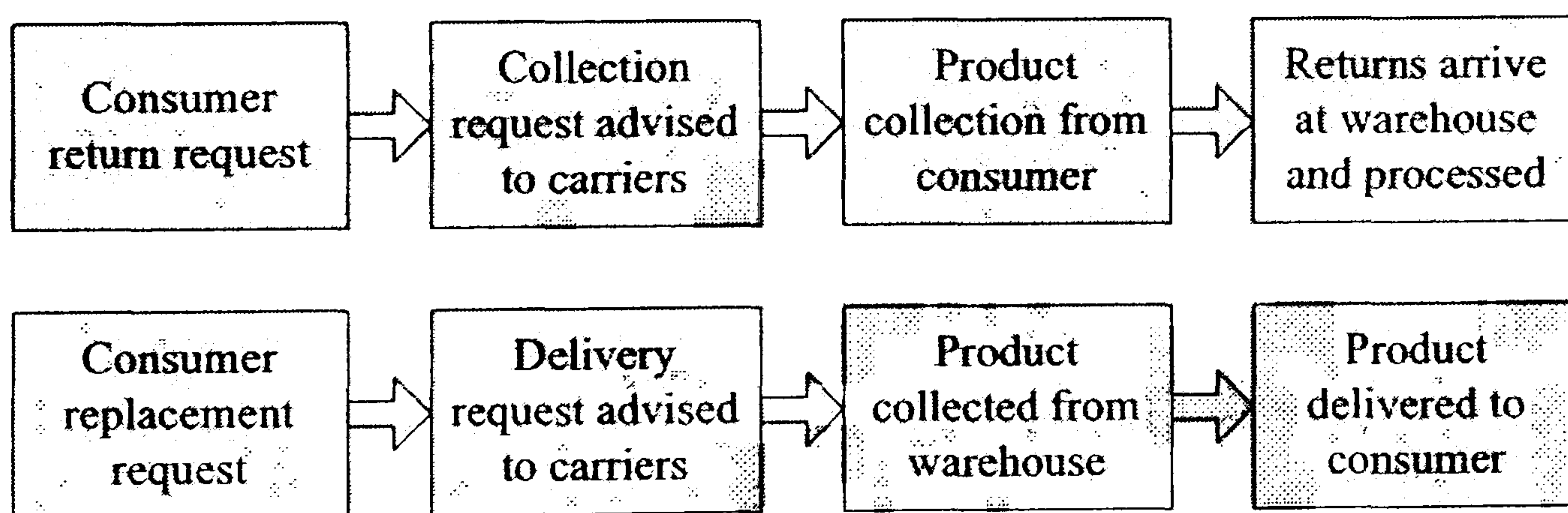


Figure 8.3: Return and Replacement Flows

To show that returns represent a big issue for retailers in terms of cost and profitability, Department for Transport (2003)’s research is cited here. They did some research on reverse logistics and found that most organizations in the survey had returns of between one and five percent of their sales value. The percentage of logistics cost associated with handling of returns as a percentage of total logistics cost would be five percent. SOT1 said that return can cost four or five times more than delivery. Problems associated with returns are low vehicle utilisation, inappropriate repackaging, wrong labelling, security, resorting and disposing. The reverse channel is also less secure:

more theft from staff and dishonest consumers (McKinnon and Tallam 2003). Consumers may return the wrong product.

Return Rate

Return is affected by several factors, such as product quality, the gap between consumers' expectations and perceptions, or product range. Table 8.6 summarizes the return rates of some products and in this interview sample, clothing have the highest return rate. The fashion retailers typically have to make three delivery journeys for one sale. Return is a major cost element for them and thus prioritised. LSP1 said: "Every method should be taken to reduce returns." Products such as electronic and office goods are less likely to be returned as consumers know better what to expect.

Interviewee	Return Rate
RET5 LSP1	35-50% for clothing including: 35-40% for women's wear, 25% for men's wear, 10% for children's wear
RET4	2-10% for electronic products
RET6	5% for office products

Table 8.6: Examples of Return Rates

Furniture may also have a high return rate due to the high damage rate. Some flat packed furniture does not have proper corner protection and if people lean on the corners there would be damages. LSP2 mentioned one of their clients, a houseware retailer had a huge return rate of 35% in 2005 due to three reasons:

- Some large and bulky products are delivered by suppliers directly and suppliers did not box orders well.
- Products were not labelled correctly.
- The LSP did not box products well (e.g. use single wall rather than double wall)

A few measures were taken by LSP2 in early 2006 which effectively brought down the return rate to 8%. LSP2 advised the retailers to use specialized carriers for some bulky and large items which are likely to be damaged. Suppliers of the retailer were advised to pack things properly and LSP2 improved its own packing system. Products were sent out in boxes which were robust enough to stand for two journeys in case of returns. This is a good example of how retailers and LSPs can work together effectively and solve problems.

8.3.5 Reception Box and Collection Points

Reception box, collection points and box banks are unattended home delivery solutions which have been explored by some pioneering companies in the UK but few have been very successful so far. More than half of the interviewees' companies had experience of trialling one of the unattended solutions but none of them lasted long. The majority of the interviewees predicted a very low to medium growth rate for the unattended solutions in the next five to ten years.

One main reason that reception boxes do not seem so appealing is that the cost is high. Few consumers are willing to pay a few hundred pounds for a reception box. RET6, which actually sells reception box to consumers, confirmed the low sales volume. Retailers do not deliver sufficient volumes unattended to justify the investment. There is no critical mass. RET1 said: "The concept of reception boxes is immature, expensive and risky. I am not sure whether our consumers on the whole are willing to pay for it."

Another issue is the capacity: reception box can receive only one delivery a day. The box is left open by the owner in the morning. If the first delivery man puts goods inside and closes it, the second delivery man can not have access to it. Although the probability of more than one delivery per day is very low, it is still a constraint.

As to collection points and box banks, they can only work if there are many of them and there is always one nearby. But huge investments are needed to achieve this scale. Staff may be needed to monitor every collection point and it is going to be very difficult. Carriers do not find collection points to be particularly appealing either.

Table 8.7 summarizes the advantages and disadvantages related to the usage of reception box and collection points from both the literature and interviews.

	Reception Box	Collection Points
Advantages	Consumers enjoy convenience while not having to stay at home	Close to consumers' home and easy for them to pick up goods left there
	Improve first delivery success and efficiency	Improve first delivery success and efficiency
		Increase drop density, optimize route and schedules
Disadvantages	Suitable for certain products only, constrained by product size and value	Suitable for certain products only, constrained by product size and value
	Low utility rate	Can fill up very quickly in peak time such as Christmas and not utilized frequently in off-peak time
	Very expensive to purchase by individual household	The UK population is not very concentrated in some places and difficult to achieve economy of scales
		Consumers may have to drive to pick up goods and lose the convenience of true home delivery
		Difficult to manage

Table 8.7: The Advantages and Disadvantages of Reception Box and Collection Points

Reception box and collection points may prevail, but not in the foreseeable future. As IND1 said: "Ultimately they may take off and houses will have this sort of thing. But not in the short term, and the problem is they are always the wrong size, wrong shape and wrong place." IND2 suggested that delivering at the right time is more important than any of these unattended solutions.

Rowlands (2006b) conveyed a more optimistic message in his article about unattended delivery solutions. He argued that although some seemingly promising companies failed, a few others have survived. But the few surviving companies seem to find solutions more in B2B market than in B2C market. He especially mentioned some companies' choice of supermarkets and convenient stores as collection points which may be able to take off in the future.

8.4 TRADITIONAL RETAILERS' CHALLENGES WHEN MOVING ONLINE

8.4.1 Mindsets and Skills Barriers

Chapter Three argued that very few traditional retailers went online whole-heartedly and willingly. Most of their initial reaction towards the Internet was reluctance.

Conventional retailers had acquired modes of operation that were not well aligned to the needs of e-commerce. When asked why they decided to sell online initially, retailers gave the following reasons:

- Broadening market coverage. Retailers saw the opportunity in terms of growing business.
- As an alternative to support business. Online channel serves as an introductory method to consumers and penetrate new market segment,
- Trialling of new products. Online sales are good indications of how well some SKUs are sold.
- Diversifying retailer offerings to other channels.
- Expanding geographical range.

More retailers interviewed developed the website and expertise internally than bought out trading platform externally. IND1 discussed the two periods when traditional retailers invested heavily in the Internet since it took off in the 1990s. The first period started from 1997 and ended shortly after the bursting of the Internet bubble in 2000. Most retailers in early 1990s underestimated the importance of the Internet but they started to invest in it from 1997 when they realized that Internet suddenly affected their stock value. After the bubble burst, Internet no longer affected their stock value and their investment reduced. The second period of investment was driven by consumer demand from the beginning of 2005. Consumers were going online and buying everything, which made retailers realize that online shopping was growing quickly.

A few factors have inhibited traditional retailers' transformation into multi-channel. First of all, it takes different mindsets, skills, knowledge and personalities to run an online store and a traditional store. IND1 gave an example of a very big American retailer whose Internet sales had grown so fast that it surpassed the total sales of its store and catalogue. It turned out to be a huge problem that almost destroyed the whole company. The management did not have the right skills to manage the Internet. They did not know how to cope with the surging demand from the Internet. The channel needed different people to manage it.

The second factor is organisational culture. A true multi-channel strategy means retailers selling with equal commitment to all channels. But many retailers separated online channel from the traditional channel, which caused internal rivalries and disintegration in information sharing. Retailing organisations have variation in priorities internally. IND2 and RET3 both expressed concerns that online channel is considered as a relevant part of the portfolio, a part of the business and important for the future. But it never gets the same attention from senior management as stores. However RET1 was confident that they are very good at giving the Internet as much focus as it requires to be successful. For those who have not adjusted their mindset yet, it may be time to do so now.

8.4.2 Product Range and Consistency

The product portfolio traditional retailers put online is the key to success. When retailers started to develop online channel, they normally trialled with a small number of carefully selected SKUs. This was a prudent and effective way to begin with. The issue is, for most UK retailers, the online range accounts for only a small proportion of the whole range. Very few retailers keep a high consistency across all the channels (except for catalogue companies who just put the whole catalogue online). Department stores tend to put less than 10% of their SKUs online. In contrast, IND1 mentioned Home Depot in the US, the world's largest home improvement retailer, whose online store is ten times than their actual store in terms of SKUs and stocks. He also mentioned a survey done by Boots that found people who did not find what they wanted from Boots website would assume that Boots store did not have the stock either; they would go to another retailer. Maintaining consistency guarantees consumers a seamless across-channel shopping experience and keeps the brand identity integrated. IND1 said: "Many products are category specific and are differentiated by style and design. These differentiations are created by manufacturers. Retailers have to differentiate in brand, which has an emotional content in it."

If a retailer has a wide range of products that requires very different dispatch and delivery handling, the costs may be high. RET4 only sell products with a long product life cycle and fairly sustainable stock level online. Those with spiky level of availability

(influenced by season, fashion or have very unstable demand) will not be put online. So the availability of online products is always very good as products have to have good availability to be sold online in the first place. Most retailers do not have the volume and operations scale to put all SKUs online. Only a few with massive home delivery volumes can afford to do so. Some retailers are losing money on home delivery of certain SKUs and they plan to take these unprofitable ones offline. However, this might affect their whole online sales. As IND2 commented, "I think retailers should be wise to offer their whole SKUs online. Some retailers only sell things that are not difficult to deliver. That is problematic. In the future if people can't find what they look on the web they get frustrated and may go to other websites." What consumers want is convenience. It costs them little to switch retailers if they find themselves unable to buy all that they want in one purchase.

When commenting on which SKUs to put online, RET1 thought that for any retailer or any range, there are always lines that do not make any money and it is not just specific to home delivery channel. "In any range you will have this issue. Whichever sales channel you use, there will be products that you don't make money, and others that you make lots of money. The unprofitable lines are put for price differentiation." The Pareto Principle or 80-20 rule applies here, i.e. 80% of revenues come from 20% of product categories (Juran 1945). Also distribution cost for a particular product varies for conventional and online channels so product lines vary in the contribution. Retailers need to look at the variation of cost relativities for the two channels.

Low demand is another reason cited by retailers for not selling all SKUs online. RET2 currently offers less than 50% of their SKUs online. The retailer started by offering online everything it had in store a few years ago. But many of them were never purchased. There was just not enough demand. This retailer is planning to put all SKUs online for people to see although they would only allow a certain number of things to be purchased online. Putting all SKUs for display online helps to clarify confusion and deliver a consistent brand image.

Retailers need to integrate their e-commerce strategy into their whole organisational development blueprint. High street shops are struggling to make a profit. For retailers

who plan to close some of their high street stores such as Dixons, they can consider expanding their online product range.

8.4.3 Catalogue Companies

Catalogue companies' embrace of the Internet as inevitable, as IND1 commented "it makes perfect sense as they are a discrete and relevant group." The retail format of catalogue can translate more easily to Internet. RET5 and a major client of LSP2, both catalogue companies, started the online channel to attract more socio-economic groups initially but their online sales have been growing so fast that they account for more than half of the volumes now.

As mentioned in the previous section, online delivery is more demanding in timeliness so moving online is a huge challenge for many catalogue companies. The catalogue companies who initially took orders from call centres saw Internet, a cheaper way of taking orders. But they are two different customer bases. Online shoppers are more likely to be professional, richer, and better technology equipped. Catalogue companies have to have their own fleet to do delivery to be profitable. They are very good at it except that many online shoppers will not be at home for delivery, which is very different from catalogue shoppers, who are mainly housewives.

RET5 plans to open proper high street stores in the near future and becomes real multi-channel. RET6, also a catalogue company but having no plan to open shops yet said, "There is a negative impact that we don't have a store, it is detrimental to us. But in the near future we don't have any intention to open stores."

8.5 MULTI-CHANNEL AND PURE INTERNET RETAILERS

8.5.1 Multi-Channel and Pure Internet Retailers: Relative Competitive Position

Most traditional retailers have a transactional website by now. There is also a trend for pure players to develop other channels. Recently a few high profile retailers who started

as pure Internet players or direct sellers such as Sony, Figleave and Boden are either opening stores (showroom stores or proper stores) or printing out catalogues (or minilogues / specialogues).

The interviewees were asked which type of retailers they thought is the most efficient and represents the most successful retail model in the future. A few interviewees differentiated between now and the future. More than half of them thought pure Internet players are better and more efficient now but it is temporary and may change in the future. Most interviewees saw multi-channel retailing as the future.

Pure players appear to be better organized and equipped at this moment because their whole business is the online part and that is all they do. IND1 commented, "If you are a pure player and you are not very good, then you won't exist". Traditional retailers have brands, existing supply chain and customer base and thus are more likely to prevail in the long term. LSP1 reviewed most business models and considered multi-channel retailers would stand in the long term in the marketplace. Multi-channel retailers are also considered to be more successful in customer relationship. The life style of people today is that they shop where and when they want to shop. They do not like constraints. A well-known retailer may provide a better overall service though their online part may not be as good. RET1 considered themselves to have the scale and significant infrastructure which give them exposure to customers. Pure players are disadvantaged by having relatively limited access to customers. LSP2 thought pure players lack the confidence to get people's attention.

Many traditional retailers are not doing Internet sales willingly or seriously and that is why they tend to be less well thought out, less convincing and less committing. IND1 predicted that in due course retailers would realize that they could not afford to ignore the online market and once they concentrate their resources they would probably improve the way they perform.

The alternative minority view holds that pure players are the future of retailing. LSP3 argued that being efficient meant having a large enough volume of orders. The Internet has less limit than stores in taking orders and thus pure players are very efficient in this sense. "The Internet model pushes inventory back to the chain and puts less pressure on

forecasting.” SOT1 also suggested that the supply chain is the most efficient for pure players, i.e. cheap Internet presence and no stocks. “The key thing is where the product is actually stocked. Multi-channel retailers stock products in their own warehouse. Pure players can ship products directly from suppliers. The reliability of stockholding and on-time delivery and visibility of delivery are crucial. Many pure players don’t have to hold stocks and have cost advantages.” However, pure players may not generate large enough volumes to achieve operational efficiency. And to guarantee the availability and speed up the delivery process, pure players still need to have their own warehouses. The extent that they can rely on suppliers for stocks holding is limited.

SOT1 also mentioned that some of their retailer customers’ online businesses are growing every year and there have been lots of changes for them. Another reason is the technological advancement. There has been continuing increase of broadband, convergence of TV and computer. The experience of purchase online will get better and better.

RET3 took a neutral approach and said there would be success in each retailing format. He commented, “Shopping has become a social activity. Sometimes people need to take some pain out of this by going online and have goods delivered to their houses.” The author is more prone to RET3’s position. There have been very successful multi-channel retailers and very successful pure players. Modern people are getting more divided in shopping habits and preference. The most important is that retailers listen to consumers, understand their needs and try to be efficient.

8.5.2 Multi-Channel and Pure Internet Retailers: Who Provide Better Home Delivery Service?

Chapter Seven discussed the consumer survey investigating people’s expectations and perceptions of home delivery service quality they received from e-retailers. The result shows that pure Internet players were perceived to provide better service quality than multi-channel retailers. 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 the consumers' expectancy 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 not standard expectancy, so there is no standard service. Some of e-retailers think they have to offer express delivery and some others offer only standard delivery. He 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." So the lack of consistent standard to evaluate online service among consumers may cause some confusion.

Secondly, it is all about the focus as discussed in the previous section. 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. He 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. So the finding doesn't surprise me."

Less than half of the interviewees were surprised by the finding. SOT1 did a survey of top 200 retailers on their service quality and delivery options online. They did not find pure players to offer significantly better delivery promises than multi-channel retailers.

LSP3 was surprised but showed understanding that retailers' attention and focus can be distracted from the online channel. RET3 thought that if retailers put their minds into online channel and put enough attention, they should be able to provide a better service.

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.

Also, 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. Meeting consumers' expectations are more demanding for established retailers as was noted by White and Daniel (2004 p.16), "providing customer support for an online service is very labour intensive since customer expectations are very high – especially when you have a well known brand name." 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. Big grocers are increasing people's expectations in home delivery by offering very short time window that most non-food retailers cannot yet achieve.

8.6 CONCLUSION

This chapter began by introducing the company interview results. Retailers and LSPs' home delivery performance was described based on the e-PDSQ framework which answered the third research question. The results were highly consistent with the consumer surveys. Traditional retailers need to transform their mindsets and management skills when moving online. They also need to be careful with what SKUs to put online to maintain consistent brand images. Pure players' better e-PDSQ performance may be caused by the following factors: pure players are much more focused on the Internet channel where they concentrate all their resources; some pure players have narrower product range and their delivery processes are relatively less complicated to manage; consumers do not have very consistent or high expectations when dealing with pure players as they are not as established as multi-channel retailers.

Most interviewees agreed that pure Internet players provide better home delivery service now, which is in line with the consumer survey results. But many think it is a temporary thing and multi-channel retailers will catch up very soon as the Internet sales channel is becoming indispensable to retailers. The next chapter will analyse LSPs' involvement in the home delivery market and their contribution to the e-PDSQ.

CHAPTER NINE: THE LOGISTICS SERVICE PROVIDERS

9.1 INTRODUCTION

This chapter's main purpose is to provide answers to the fifth research question: the degree of LSPs' contribution to e-PDSQ differences. Service providers in the B2C market are classified and briefly introduced. LSPs' activities and involvement in the B2C market are described, followed by the classification and discussion of carriers, those who specialise in the last mile delivery. The variation in service quality and service types among LSPs is then examined. Finally, the current home delivery market and future restructuring of the market are discussed.

9.2 CLASSIFICATIONS OF SERVICE PROVIDERS IN THE B2C HOME DELIVERY MARKET

Table 9.1 distils the information from the interviews and shows a classification of the main service providers in the home delivery market. Firstly, traditional LSPs have started to expand in the home delivery market as there is a high demand for the service. Some LSPs are specialised in home delivery while some others are expanding into the market and yet to become experts. Secondly there are e-commerce specialists created out of the dotcom boom and provide comprehensive 'one-stop' services from system design, warehousing to return and carrier management. Thirdly, there are LSPs who are mainly express parcel carriers, operating in the premium market by providing speedy delivery of high value products. Many of these express parcel carriers come from the B2B market and have advanced order tracking systems. In contrast, there are standard parcel carriers and mail order companies who provide standard delivery service. They concentrate more on the non-premium market of low or medium value products. Many of these carriers belong to agency mail order (AMO) or direct mail order (DMO) companies. Apart from serving their parent companies, they also deliver for other retailers and handle huge volumes annually. Fourthly, there are specialised LSPs such as those who are engaged in two-man product delivery, or flower delivery. Some of these companies consider themselves to work in a niche market as there is less

competition than in the general parcel delivery market. But their biggest challenge is to achieve sufficient volumes to sustain economically viable operations. Lastly, local couriers are self-employed people who deliver in their private vehicles, normally cars. They are also called 'life style' couriers. They provide basic and cheap service and one courier can work for a few companies at the same time.

Apart from logistics companies and carriers, there are also other organisations involved in the home delivery market, such as software companies which develop vehicle routing or carrier selection software, media which publishes and reports the latest development and best practice in the industry, and industrial bodies which set up regulations and accreditation to strengthen the interaction within the industry and improve the service standard.

Service providers	Main responsibilities	Current market condition	Examples
Traditional third party logistics companies	Warehousing, distribution, carrier management, return etc.	Some do not necessarily specialise in home delivery; some others are.	EXEL, Christian Salvesen, Walsh Western
E-fulfilment specialists	Warehousing, distribution, carrier management, system design, return etc.	A few niche players, 'one-stop' service, comprehensive infrastructure	iForce, Zendor,
Express parcel carriers (premium market)	Express parcel delivery and collection with limited value-adding services such as packaging etc.	Speedy delivery and good order tracking system; many players come from B2B market and expand quickly into B2C	DHL, TNT Businesspost, CityLink Parcelforce
Standard parcel carriers (non-premium market)	Standard parcel delivery and collection	Standard delivery, may not require signature; some players are from catalogue companies, handling huge volumes	HDNL, Parcelnet N Brown
Specialised carriers	Two-man fleet specialising in heavy and big products; special flower distributors etc.	Competition may be less fierce than parcel delivery, but some companies struggle to get sufficient volumes	NightFreight, ACR Lane Group
Local couriers	Self-employed people who deliver in their cars or vans and deliver in local area	Basic service, but cheaper than fleet; used by many companies, one person can work for a few carriers in the same time	
Software companies	Software providers in carrier management, WHM, route planning and addresses management etc.		Metapack Precision Paragon
Media and industry organisations	Publishing the latest development, best practices, regulations, accreditation and organising events		IMRG, E-logmag M-logmag

Table 9.1: The Classification of the Main Service Providers and Parties Concerned

9.3 LSPS' B2C OPERATIONS

9.3.1 The B2C Proposition

The move into the home delivery market by some established LSPs is seen as marking an important stage in the evolution of multi-channel fulfilment, demonstrating that this is a sector the traditional logistics companies now take seriously. B2C sector still accounts for a small percentage of their overall revenues (typically 10%-25% as far as this interview sample is concerned) but it is growing very quickly for those who are making an effort and committed to it.

Specialist multi-channel e-fulfilment companies were mostly created out of the dotcom boom in response to the surging demand from emerging e-retailers. They provide complex and special solutions to pure Internet players as well as multi-channel retailers. The B2C sector accounts for the majority, if not all, of their revenues as it is where their specialty lies. They operate in a niche market and enjoy the 'first mover' advantages and reputations of possessing special expertises. As RET4 suggested, when retailers started to develop the online channel, home delivery was recognised by many as a different and more urgent demand, which should be separated from the original supply chain. This demand created a market for the specialised service. Also, catalogue companies adopted the Internet quickly and LSPs seeing the market could make easy transition to the online channel.

The interviewed LSPs unanimously considered their unique selling points (USP) to include 'special expertise' and 'reputation in the industry as a reliable partner'. Most of them considered themselves as niche players rather than a "bargain based player" (by LSP2). Involvement with retailers at a strategic level and growing with the customers at the same pace were also considered to be an advantage.

9.3.2 Service and Infrastructure

LSPs can provide a broad range of value-added services which may include:

- Warehousing

Warehousing is concerned with activities such as stock holding, inventory management, picking, packing and dispatching on either a dedicated or shared use basis. E-fulfilment specialists' responsibilities vary. Normally, e-fulfilment specialists would be in charge of managing the whole warehouses on behalf of their clients. Otherwise, LSPs can lease out the physical infrastructure only, i.e. warehouse and vehicle fleet to retailer clients, who then send a delegated management team. LSP4 suggested that some LSPs have very good Warehouse Management Systems (WMS) and they can get involved in reorder of stocks and make discount or promotion decisions for retailers if some items are not selling very well. LSPs' systems can be even more sophisticated than retailers'.

The picking systems in the warehouses are mainly manual with little automation. Automation is supposed to streamline a complex process or bring more efficiency (Frazelle 2001). It becomes a viable proposition as the scale and demand for speed and efficiency increase (CILT 2005). But sometimes automation should be the last resort as it is inherently complex and human beings may get over-dependent on it. The correct approach is to simplify and streamline a process first then bring in automation if necessary.

LSP1 explained that a few factors have led to the low degree of automation in warehouses. Firstly, these logistics companies and e-fulfilment specialists do not specialise in a certain category of product. They have a broad range of clients who deal with a big variety of products. As product shapes and sizes vary hugely, it is very difficult to standardise the process and automate the picking process. Secondly, high degree of automation requires huge amount of investment. Clients usually sign the outsourcing contract anywhere between 12 months to 5 years, which gives little time for logistics companies to invest and get payback. It is unstable and risky for logistics companies to make customised and dedicated automation for a particular client without knowing how long they can keep the client.

When the picking list comes out, a picker will pick a number of orders at one time and then sort them out later. In some companies, a trolley system is used to pick up small, medium and large products separately in trolleys with different

numbers of cases to reduce the number of picking trips and increase the efficiency.

- Packaging

Each company has its own packing standard and requirement, which covers boxes, inner, sleeves/envelopes, wrapping, and large items. LSP2 mentioned the use of more robust packaging materials and boxes which can sustain two to more delivery trips. Failed delivery attempts lead to multiple delivery trips, which can cause product damage if the packaging is not robust enough. Using more durable packages and strictly complying with packaging standard can effectively ease this problem.

- Distribution and carrier management

Some LSPs' main activities include the last mile delivery while others may further outsource part of or most of the delivery operations to parcel carriers although they organise and control the distribution process. The choice of LSPs for the last mile delivery is based on factors such as product weight, size and category, postcodes, distance, rates and retailers' preference. Order information is put into the systems which then choose a carrier automatically based on the above factors. For example, in terms of weight, LSP1 uses Royal Mail up to 2 kilos, Home Delivery Network up to 20 kilos, then Parcelforce up to 30 kilos, and Nightfreight over 30 kilos. Some retailers may have a preferred LSP for the last mile delivery while others would nominate a service rather than a particular carrier.

- Return

LSPs provide reverse logistics and product disposal services. They collect and replace returned products, which may also be posted back by consumers. There is normally a dedicated zone in the warehouse dealing with returns specifically. Returned products are sorted out and then decisions are made whether to put the product back to stock after proper treatment or to dispose it or to give it away to charity.

- Call centre

Some of these logistics companies have call centres dealing with end consumers' enquiries and complaints, especially delivery related ones. Some retailers deal with enquiries and complaints themselves to have more control while others prefer to outsource the service. The call centre has become a very popular activity to be outsourced.

- System design

E-fulfilment companies enjoy the advantage of the cutting-edge technology of integrating web site design, order taking, processing and tracking, delivery and return management, call centre and after sales service. End-to-end fulfilment solutions are offered and clients can either take a whole solution or part of the package. Clients have different levels of access to e-fulfilment companies' system depending on what services are offered. LSP1 suggested that its clients can just do marketing, merchandising and financial control while using LSP1's operational systems and still have control of things. However, it is not very common for retailers to outsource everything as some of these areas are core business and retailers want to have control.

9.3.3 IT Integration and Communication with Clients

Depending on the degree of collaboration and the services provided, LSPs may be highly integrated with their clients' IT systems. Some LSPs either offer clients flexible level of access to their system or try to comply with their clients' systems. They normally have a standard system to operate and clients can choose which section of its system they want to use or had access to. The degree of integration depends on what clients require and what they have had already although LSPs want to get involved in their clients' system as much as possible. The extent of integration also varies depending on the trading volume and relationships.

Real time information can be shared and data are exchanged once per day minimally. To give an example, LSP2 mentioned a big client on one warehouse site. The client sends them stock replenishment two to three times per day, and they download

consumer orders from the client's system three times a day, at 6.30am, 12.30 noon and 3.30pm.

9.3.4 Charging

Charging can be very complex and it depends on the following factors.

- Charging primarily depends on the cost of service and what the market can bear. Logistics companies charge their clients for service activities such as storing and delivery.
- It also has to do with the product category, i.e. heavy and large products which need two-man or special delivery are charged differently from small items which can go by parcel or package.
- Volume is another factor that can be critical in delivery rate. Logistics companies consolidate lots of traffic and are in a position to buy cheaper from carriers than their clients. As to delivery, logistics companies charge retailers cost plus margin. LSP2 gave an indication of the level of charging which was cost plus ten to fifty pence per order.
- Other factors include geographical areas and distance. Urban areas have higher drop densities than remote rural areas, and are thus cheaper to deliver to.
- Seasonality was also mentioned. The biggest peak time is pre-Christmas from mid October to mid December, when some retailers' sales volume can increase ten times or even more. There are other smaller peak times such as Easter and June. Companies tend to charge higher in peak time when demand suddenly surges. If LSPs are very confident and have good margin in one area, they can use it to subsidize another area.

It is a common practice for retailers to charge a flat rate for a delivery service which applies in most areas of the country. Retailers' flat rate charging may reflect carriers' flat rate charging structure. Charging is a delicate art that companies have to manipulate carefully. When asked whether they would know how much their competitor charges, LSP1 said "we don't know how much our competitor charges directly but when we lose a customer and if it is the cost issue, we will be told so."

9.4 LSPS' LAST MILE DELIVERY OPERATIONS

9.4.1 Variations in Service Types and Prices

Apart from a small number of LSPs who further outsource all the last mile delivery operations, most others provide delivery services. LSPs vary in home delivery service types and prices. It is unanimously agreed by all interviewees that wide variation exists in the following aspects:

- Service offerings and speed of delivery

Some LSPs are good at 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.

- Level of services associated

Some LSPs are better equipped in technology such as efficient electronic tracking and tracing system, or electronic signature system. Premium carriers are more likely to require signature for deliveries.

- Weights and sizes carried

Size and weight are two important elements for classification. The government statistics (Competition Commission 2004) provide estimates of the weight split of home shopping traffic: 65 per cent of parcels weigh between 300g and 2 kg, 20 per cent between 2 and 10 kg, 10 per cent between 10 and 15 kg and 5 per cent between 15 and 25 kg.

- Product group

There are LSPs who specialize delivering two-man products (kitchen, bathroom, furniture and white goods) and flower etc. Some others specialize in high value electronic products such as mobile phones or computers.

- The prices

The prices also vary. For example, it may cost £2 for a five day service provided by a local courier. Some catalogue supporting companies could charge £2 pounds, delivering up to 7 kg, or £3 delivering up to 25 kg. Some premium carriers could charge no lower than £4 and £5 for deliveries up to 35 kg with tracing and tracking service. On the other hand, if it is a named day it could be £8 to £10.

- Geographical coverage

Most big carriers offer national coverage with exception of offshore deliveries (channel islands, Isle of Man, Northern Ireland, Scottish islands and some of the Scottish highland areas), where there is not enough volumes. The national carriers tend to leave these areas and allow a specialist to consolidate for everyone.

The delivery service of LSPs is thus constrained by parcel size, weight, product category, delivery time and where the delivery destination is. The Internet traffic is considered to be good as most orders are small items and small quantities which comply with LSPs' systems well. Table 9.2 shows a comparison of the main characteristic of the services offered by some LSPs which reinforces the differences of their service offerings.

Company	Speed of delivery	Weight capacities	Geographical coverage	Type of products carried
Reality	3-5 days	Up to 25 kg	98% of GB population	Mainly AMO*
Business Express	1-2 days	Up to 15 kg for third party deliveries, up to 25 kg for in-house	96% of GB population	Mainly AMO
Parcelnet (Otto)	24hr, 48hr and 72hr, timed deliveries (am/pm) to Next	Up to 17 kg for in-house	95% of GB population	Mainly AMO / DMO**
Royal Mail	First and second class mail 3 days + for stand parcels, next day for special delivery	Up to 20 kg	UK wide	
Parcelforce	Time delivery, next day, 48hr	Up to 30 kg	UK wide	
N Brown	3-5 days (48hr target service through SQE JV)	Up to 10 kg	>65% of UK postcodes	Mainly DMO
Securicor Omega Express	Next day, 2 days, timed deliveries	Up to 31.5 kg	UK wide	
Amtrak	Next day, timed delivery	Up to 35 kg	UK wide	Mobile phones, computers, electrical products and wine
Lynx	Next day, timed delivery	Up to more than 25 kg	UK wide	Mainly computers and mobile phone
Citylink	Next day, timed delivery	Up to 30 kg	UK wide	Mainly high value products

Table 9.2: the main characteristic of the services offered by some carriers

(Adapted from Competition Commission 2004; *Agent Mail Order; **Direct Mail Order
Note: Reality and Business Express are now merged to Home Delivery Network)

The following sections divide LSPs into the premium and the non-premium operators in terms of the last mile delivery operation. But the distinction is not so clear-cut: most LSPs are capable of offering a broad range of delivery services, linking the premium and the non-premium segments together.

9.4.2 Premium Parcel Delivery Operations

Express parcel delivery companies operating in a premium market normally provide speedy delivery, such as next day or guaranteed delivery times with proof of delivery services. Some of these LSPs come from the B2B market and have expanded into the B2C market during the past five years or so, although the volumes they handle are significantly lower than those of the major home shopping companies. Table 9.3 shows

the estimated shares by value in the UK B2C express delivery services. These are the most recently available data from the government.

Company	% share
Parcelforce Worldwide	21
DHL	15
TNT UK	14
Parceline	7
Business Post (include Fedex)	7
Lynx Express	5
Initial City Link	5
ANC	4
Amtrak Express Parcels	3
UPS	3
Interlink Express Parcels	3
Target Worldwide Express	3
Nightfreight	3
Reality	2
Tuffnells Parcels Express	2
Others	3

Table 9.3: Market Shares by Value in B2C Express Delivery Services in 2002

(Adapted from Competition Commission, 2004)

B2B delivery is very different from B2C delivery in the following ways:

- There are approximately 23 million residential addresses and 2 million business addresses in the UK (Competition Commission 2004). Business addresses tend to be concentrated in town centres, industrial estates and business parks, while residential addresses are much more dispersed, thus making it more difficult to achieve drop densities in B2C deliveries. LSP5 said that his company’s delivery frequency to business address is 2.8 times higher than to residential address.
- The requirement and expectations are different. Companies tend to have greater expectations and pay a premium for business deliveries which are generally high-value items or are urgent. Timeliness is crucial. In contrast, there is less a willingness on the part of end consumers to pay high delivery charge. Price is one of the major drivers for consumers to buy online as IND2 said “I assume consumers will buy on price”. So reliability rather than speed of delivery is more important to some consumers.
- The first time delivery success rate is much lower in B2C than in B2B. Either a second or third delivery is required or the parcel has to be left at a suitable location.

- B2C operators need to deal with returns regularly, which is rarely a problem in B2B.
- Due to the above reasons, the margin in B2C delivery is very small. LSP5 suggested the cost of B2C delivery is 2-3 times higher than B2B. Volume is critical to achieve the economy of scales.

Despite all the differences, it seems to be an irresistible trend for B2B players to get into the B2C market. They see how quickly the B2C market is expanding and they want to seize the business opportunity. Also, the B2B market is shrinking for those who deliver to high street stores. LSP5 said, “B2B is diminishing because some retailers are closing high street stores. Our existing customers continue to migrate their business to home delivery and the new business pipeline is heavily weighted towards home delivery customers.”

The Competition Commission (2004) identified four types of entry by B2B carriers into the B2C market. Firstly, entry in partnership with a home shopping business, e.g. the joint venture between Securicor Omega Express (DHL) and N Brown, allows SOE to use N Brown’s courier system when its B2B customers require for a small volume of B2C deliveries. Secondly, targeted niche entry, e.g. Business Post delivers Dell computers. Thirdly, small-scale entry into B2C market as some carriers’ B2B customers have small B2C requirements or carriers have spare capacity. Fourthly, expansion of small-scale B2C business to a large scale, e.g. LSP5 said their B2C operation now accounts for more than 25% of their total revenue and they plan to expand it even further.

LSPs with a B2B background provide very good order tracking and tracing systems to their clients. They have IT interfaces and end consumers can go to the their’ website to check the order status. Manual paper work is used to deal with small customers. For example, LSP6 provides clients with several options, depending on what products the clients have, how big the volume is and how often they ship. They provide software packages, which allow the clients to process orders and labels. For small volume such as one or two parcels, they use manual order sheets. LSP6 discusses with its clients the best way to marry the two systems.

Although premium players are very good in B2B as they came from a competitive market, and have to provide online tracking, hourly delivery window to business, B2C is very different from B2B. Thus will these players' performance upon their entrance into B2C market be as good? B2B carriers' biggest problem may be that they are not good at dealing with failures because they are not used to it. Deliveries to companies almost can never fail as company customers are very demanding and happy to pay premiums for a critical delivery within very short time window. In B2C market, consumers are buying in the most convenient way and willing to wait for a whole day to get the delivery. Therefore B2B parcel carriers may not have the necessary customer support to deal with the delivery problem. RET1 expressed his concerns over these parcel carriers' prospect in the B2C market.

9.4.3 Non-Premium Parcel Delivery Operations

The non-premium parcel carriers carry more volume in the home delivery market. They are supporting arms of catalogue home shopping companies, such as Home Delivery Network (HDNL), N Brown and Parcelnet. HDNL mainly focuses on three to five day standard delivery of parcels up to 25 kg, without obtaining a proof of delivery. HDNL was merged by Business Express and Reality in 2003, which were owned by Littlewoods and GUS separately then. These standard service providers tend to use local couriers a lot more than premium carriers. Premium carriers may only use local couriers to supplement their operations, while some non-premium carriers' networks can be mainly composed of couriers such as Parcelnet.

Traditional catalogue supporting companies have a long history of delivering low-value products such as clothing and household products which do not have a strong element of timeliness. Delivering products ordered from the Internet is different and can be challenging for them. When talking about catalogue companies, SOT1 said that catalogue customers did not have money to buy something straight from the shops and could not borrow from the bank. That was why they used catalogues. Many of these people did not have full-time work and they tended to be at home all day. Thus delivery did not matter in terms of timing. According to the LSPs consulted, most catalogue companies offered very inexact promise of delivery time. But online purchasing is very

different. Online consumers are very different with more disposable income and less likely to be at home. So online delivery is more demanding. Moving online is a huge challenge for many catalogue companies in terms of delivery timeliness.

Catalogue business like HDNL and Parcelnet thus have different views and customer experiences from premium parcel carriers although they operate in the same B2C market. As supporting companies, catalogue companies' predominant offer is finance, i.e. having people buy products, rather than delivery proposition. RET1 used HDNL as an example to show catalogue companies' limited offerings: "They (HDNL) had never been prepared to invest into delivery network to do the checking or tracing service. Now they are getting there." The fact that these companies start to improve their service offering may be a proof that they are willing to change with the Internet era, or they have to change. SOT1 suggested that standard delivery of 5 to 7 days offered by some carriers is not good enough and will not last long.

If the above non-premium carriers' efforts to improve service standards have blurred the distinction with the premium ones, the gap may be further filled in by some premium carriers' intention to split B2B from B2C operation and broaden the offerings in the B2C market. Although it is a common practice to combine B2B and B2C parcel deliveries together, the differences in geographical addresses and delivery requirement have made one interviewed carrier seriously consider the possibility of splitting the two. LSP5 said, "There is an urgent need for product range to satisfy current sales pipeline requirements. We need to match features and benefits to the cost of delivery. B2C has different requirements to the current B2B product range."

This recent development in the home delivery market that these two cultures (premium and non premium operations) come together and clash has attracted the interest of retailers and aroused speculation as to which model is going to prevail. Retailers' concern is how to get LSPs to provide good service for them. RET1 mentioned an express carrier who delivers only twice and consumers have to drive to their depots if both deliveries failed. But catalogue companies can deliver up to three times.

LSPs not only compete, but also collaborate with each other to some extent when their own networks cannot handle all the volume. For example, catalogue companies may do

some deliveries for one another. No carrier's network covers 100% of UK residential addresses and there are limits on product weight and size. An LSP sometimes subcontracts part of the business to another LSP for various reasons. This point will be further explained in the section discussing the current state of the home delivery market.

9.4.4 Specialised Delivery Operations

There are LSPs specialising in a particular type of product, such as two-man product, white goods, furniture and flower etc. Although there are fewer of these specialised carriers than parcel carriers, the market is no less competitive. Because the volume of specialised goods is much less and some carriers tend to struggle to achieve sufficient volumes to sustain economically viable operations. More nationwide two-man home delivery operations are emerging and some parcel carriers are expanding into this market (Rowlands 2006a). LSP4 suggested that there are national specialised carriers and local ones. The bigger companies tend to provide the service that they promised but the promise may not be that good due to the constraints they have to face when relying on dedicated operations, which limits speed and frequency. Retailers selling goods with a relatively low price often look for cheap delivery services and use local, small carriers, i.e. 'a white van and a man', and may receive sub standard service.

Volume is crucial to specialised carriers and how to get the goods delivered economically is a big problem. Two-man products are normally of high value varying between a few hundred pounds to a few thousand pounds. LSP4 described the delivery a 'dilemma'. If the order value is a few thousand pounds, the retailer can put the order into a dedicated van as the sale value justifies doing that. But if the order is two or three hundred pounds, it is very difficult for carriers to do the job to both the retailer's and consumer's satisfaction. The delivery cost is high in relevance to sale value and the margin is very low. The interviewee said, "So our problem is how to provide a cost-effective solution. Lots of retailers find it difficult to maintain a service level to consumers' satisfaction at a reasonable cost. The margins don't support it. Retailers can't afford it." LSP4 also showed his frustration by consumers' insufficient understanding of what it costs when two men come in a van and deliver the goods.

The specialised market is also more vulnerable. There has been some consolidation or removal of specialised carriers. SOT1 said: “Specialized carriers are only likely to be profitable if they can get the volume. I think if you put all your money in one basket you are more vulnerable.”

Many multi-channel retailers whose product ranges include large and bulky products outsource part of the delivery to specialist carriers. RET2 commented that the specialist product carriers they use offer a cost saving to them as compared to using their own vehicles. It is common practice for retailers to handle some of the deliveries in-house as it is considered to be core business. Also some retailers would not want to expose themselves to specialist carriers as the only route to deliver these products due to the high risk.

9.4.5 Local Couriers

Couriers are self-employed private individuals, using their own vehicles. They are also called ‘life-style’ couriers such as women with children who work part-time. Both premium and non-premium parcel carriers use local couriers, who may work for a few companies in the same time. Couriers are only paid for each parcel delivered so carriers have lower fixed costs. Courier based operation is also very flexible and good to handle variations in business volumes, including those resulting from seasonal demand. They also know their locality better and have a better control of delivery timing than company van drivers. SOT1 said, “In the end, most costs are from the local delivery network. When you get a lot more business you need more people and vans.” LSP5 commented, “Couriers cost a lot lower than employee drivers. They are also more flexible such as delivering in the evening etc. At this moment these local couriers use paperwork without advanced tracing system. So you can bring the last mile cost down.” RET6 said his company even uses couriers for the next day delivery which brings down the total cost effectively. Another advantage of couriers is their personal relationships with consumers. Some old people would order or return goods to get a chat with couriers.

Lack of electronic tracking may be one disadvantage of using couriers. Carriers give recipients couriers' telephone numbers for them to make contact. The use of cars creates limits on parcel size.

9.4.6 Single vs. Multiple Sourcing of Transport in Home Delivery

Most interviewees believe in multiple sourcing of transport and they think single sourcing is only good when retailers have a very narrow range of products and offer very limited service. The advantages of multiple sourcing include:

- For logistics companies who have various customers, or for retailers who have a broad range of products, no single carrier can take all the traffic. SOT1 who specialises in multiple carrier management said that there is no carrier in the UK who can deliver small, medium and large products in morning, afternoon or evening and so on at a next day or two and three days' basis. So if a retailer wants to offer consumers a good variety of services it has to use multiple carriers. Carriers can thus be selected on their strength in delivering different consignment dimensions and services.
- Less risky. The use of multiple carriers is the 'natural defence' against industrial strikes or the break-down of one carrier's central network.
- Easy to cope with seasonal volume uplift. The Internet model has much less constraint than shops in terms of the volume it can carry. One carrier's network may not cope with it, especially in peak time. LSP3 said, "For Internet based model, it is difficult to predict the volume. Fluctuating volume decides fluctuating rates from carriers." RET2 supplements their own fleet with carriers and is able to flex the boundaries between the two operations to maintain the customer lead time and make good use of the fleet in peak and off peak sales periods (increasing the proportion of carrier shipments during peak and reducing it off peak).
- Carriers' specification. Carriers have strength and capability in particular areas and products. It is challenging to be the single distribution source of a retailer. IND2 said, "Some carriers are quite happy not to have to do things that they find are difficult to do."

- Good for benchmark purpose. RET1 said: “If you use single source, you get efficiency by putting all eggs into one basket and better rate but you can’t benchmark the services.”

On the other hand, the disadvantages of multiple sourcing include:

- Less load consolidation opportunities if more carriers are used.
- More vehicle space, loading bay and reception facilities requirement for multiple sourcing. It reduces space constraints in warehouse with single carrier. LSP2 uses multiple carriers and needs one door for each carrier when loading.
- Increased complexity in IT, management and carrier system integration (label and data file format etc.).
- Greater opportunities for errors.
- Probably less favourable rates, i.e. less of bulk discounts and less committed service. LSP2 and LSP1 said that retailers could definitely get better rates by increasing the volume. If the volume is as high as one or two million parcels a year the best rate can be offered. LSP5 said that retailers could get a better deal from the carrier if they give all their business because the carrier is committed. The bigger the volume the more cost effective the economy is. But carriers put a minimum charge at a limit otherwise they would deliver for free if the volume is very big. Normally carriers will not give away the favourite rate in the beginning so to leave some scope for negotiation. However it is sometimes argued that multiple sourcing can yield lower average rates as several LSPs have to compete for the business and can have their costs benchmarked.
- Higher trunking cost between warehouses and depots.
- Retailers cannot cultivate the same close relationships with LSPs if there are many of them.

In general, for LSPs and e-fulfilment companies, they need to use multiple sourcing to cope with different demand. For retailers who use carriers directly, it is necessary to do a trade-off analysis to see how much they can save by using single source and how much they benefit by using multiple sources. At present, there are half of dozen companies in total who design multiple carrier selection system in the market, with Metapack being the best well-known one. Carrier selection software holds information

of carriers' products and constraints, retailers' requirements and preferences. It decides the best carrier for each delivery, working on the basis of price, service or both (MacLeod 2006). Metapack is integrated with eighteen different carriers. They believe that getting the right carrier for the right job in the right location with the right service is complicated. Their system selects the carrier for each order automatically based on constraints (size, weight, product category, postcode, distance etc.), preference (retailer's preference for carriers) and rates. IND2 said that carriers have different views on this kind of carrier selection system. He commented "I think this system has a place but I am not sure how far you can push it."

9.5 LSPS' IMPACT ON E-PDSQ

9.5.1 Variation in Service Quality among LSPs

The above sections discussed the service type variations among LSPs, especially among carriers who do the last mile delivery. E-fulfillment 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. Thus the difference in LSPs' B2C experience and specialty contributes to retailers' e-PDSQ differences.

Express carriers differ from standard carriers mainly in speed and prices. As to how much carriers vary in service quality, two views have been put forward by interviewees. More than half of the interviewees hold the view that carriers all reasonably provide certain service within the service and price range. LSP1 considered carriers to offer similar service in premium and non-premium market and it all depends how much retailers want to pay for. LSP3 said that despite of the service range differences, carriers are good at certain things and are used for what they are good at. RET6 did not think

there are many differences among parcel carriers. 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.

The alternative view (less than half of the interviewees) holds that carriers vary a lot in service quality. SOT1 believed that carriers vary in efficiency and service quality to a very high extent. Retailers know which carriers are better than the others. RET1 said that they have bad and good experience with various carriers. “At the moment the (home delivery) market is undertaking quite heavy rationalization... There are companies who have financial difficulties, and it is mainly because they are not as efficient as they should be. There is a broad range of service quality. Standard and premium carriers are differentiating between themselves by service.”

The first view appears to be more convincing. Although there must be variations in service quality from one carrier to another, the variations should be acceptable within the service and price range. 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. The market itself is the best judge. No carriers who are inefficient and expensive can last for long. Home delivery market is very dynamic and it does not take long for people to realize which carriers are good at which things. If all the carriers can be used where their main strengths are, there will probably much less friction. Thus retailers' option of carriers with different service offerings affects their e-PDSQ. It depends on how much retailers are willing to pay for the delivery.

Since pure players were perceived to provide better e-PDSQ than multi-channel retailers, do pure players use carriers with better service offerings? There is no literature about this. Table 9.4 shows what kind of carriers the retailers in this interview sample use.

Retailer Code	Retailer Type	Parcel Carrier Type and Services
RET1	Multi-channel	Use own fleet, both premium and non-premium carriers; offer premium delivery only
RET2	Multi-channel	Use own fleet and a premium carrier; allowing consumers to book the dates online
RET3	Multi-channel	Use both premium, non-premium carriers and local couriers; offer both premium and standard delivery
RET4	Multi-channel	Multiple carriers, decided by the e-fulfilment specialist RET1 uses; offer both premium and standard delivery
RET5	Pure Player	First class delivery by Royal Mail and standard delivery by a non-premium carrier
RET6	Pure Player	Own fleet; a premium carrier and local couriers for premium delivery only

Table 9.4: The Carriers Used and Delivery Services Offered by the Retailers

This sample shows that the pure players do not necessarily use better carriers than the multi-channel retailers. To confirm this assumption, the author did a follow-up web site review, aiming to investigate what carriers retailers use and what delivery options they provide. The author reviewed 49 web sites altogether, including 16 multi-channel retailers and 33 pure players in electronic products, furniture, household products and clothes sectors. Unfortunately only 9 of the retailers revealed which carriers they use on the websites. All the 9 retailers are pure players and 8 of them use premium carriers. The lack of information makes comparison impossible and the sample is too small to conclude that pure players use more premium carriers than multi-channel retailers.

When commenting on retailers' budget on delivery service, SOT1 warned that some low cost retailers who tend to buy the cheapest delivery should also look at the services. He said: "Ultimately everybody can compete on price. Speed to market and agility can be a differentiation and a competitive advantage. Delivery may become a differentiation in the future. Consumers want reliable delivery, delivery options suit their needs and first time delivery success." He argued that some carriers may redeliver once while others may redeliver as many times as needed. Thus even if retailers pay more for the delivery, they can save money eventually if the first time delivery success rate is high. Redelivery costs money and causes long queues in the call centre when consumers' enquiries of their deliveries floods in.

Therefore if retailers had bad experience with carriers before, they should not always blame carriers' poor service quality. Retailers should look at what the carriers offer and how much they charge. Other factors may include inadequate communication and lack

of understanding, which leads to another issue: the relationship between LSPs and retailers and how that affects the e-PDSQ. The next section discusses this.

9.5.2 The Relationship between Online Retailers and LSPs

When commenting on LSPs and retailers' relationships, IND1 made an interesting observation. "Retailing companies always tell you there are problems whoever they use. They would say carriers are awful and too expensive. And carriers would say retailers expect them to do this work for not enough money." Fortunately, the relationships between retailers and carriers are not always 'hostile'. RET6 said that his company is regularly involved in the training of the staff of its main carrier and it has brought mutual benefits.

LSPs were asked whether there was any difference in dealing with or integrating with multi-channel and pure players. All carriers interviewed suggested that there was no difference in the integration of parcel itself. Carriers provide standard service and do what they are told by their clients. They pick up parcels from either a retailer or a LSP and then deliver them to consumers. Therefore, from carriers' perspective, if there are differences in home delivery service they are caused more by the performance of individual carrier than how the carriers integrate with different types of retailers.

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 how their relationships are. 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 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."

Some other LSPs may adopt a different strategy or be reluctant to give an impression that they treat their clients differently. LSP3 said: “We have similar level of relationships with our clients and we try to treat them equally.”

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.

At least for some LSPs, the relationship issue has an impact on the service quality they provide to retailers. The key to improving the relationship and service quality is about communication. The two partners should benefit from each other’s open, trusting and understanding relations. The Interactive Media in Retail Group (IMRG), the industry body for the UK's e-retailers has organised the carriers’ charter and retailers’ charter and been trying to bring both parties together in finding realistic solutions in home delivery. IMRG holds biannually meeting and provides a platform for the two parties to better interact with each other.

9.5.3 Future Restructuring of the Market

All the interviewees agreed that the market would consolidate and merge. The unanimous view is that the current market structure is very fragmented with about 20 national carriers, each of who has a relatively small share of the market. The market is not sustainable and is undertaking quite heavy rationalization recently with some companies running under financial difficulty or gone bankrupt. But as e-commerce is growing rapidly, there may be more players coming into the market in short-term. In the long term however, the market will consolidate and there are likely to be fewer players.

Smaller companies may be taken over by big companies. RET2 gave examples of consolidation and removal of specialised carriers (kitchen appliances most recently) and anticipated further consolidation of the small to mid ranking carriers as they either loose

out or are bought up. However, big companies do not have reasons to be complacent. LSP2 predicted that Royal Mail might be bought out at some stage as it is losing power in the parcel delivery although nobody can compete with it in mail delivery.

LSP5 and LSP1 considered the entrance barrier to the market is high as a huge volume is needed for a company to make profit and be financially viable. Also the set up cost is high. To provide a national home delivery service resources are required for collection, sorting, trunking and final delivery, including physical infrastructure such as fleet, warehouses and equipment; people such as logistics managers, drivers, pickers, packers and administration staff etc; and IT systems (Competition Commission 2004).

In contrast, IND2 and SOT1 thought that the entry is straightforward which can start from the basic requirement 'a man and a van'. IND2 gave an example of a furniture delivery company which started from scratch and now has created a network of 12 depots across the country just in two years. This speed of growth is likely to be rare but it does show that wherever there is a business opportunity, somebody will spot it and start to develop. SOT1 compared the UK market with that of the USA. He suggested that the European market is dense in population which means it is economical to set up a distribution network as there are sufficient volumes in small geographical areas. The US market is much larger geographically and have lower population density so carriers need to use aircraft to distribute nationally. Thus there are only four major carriers handling parcel deliveries nationally, each of them much larger than their British counterparts. Laseter et al. (2000) discussed the home delivery model in the US and concluded that the drop densities were very low and thus the operations were expensive. The UK market is more comparable to US regional market so the drop densities are much higher and the entry level lower.

9.6 CONCLUSION

This chapter classified and analysed LSPs in the ever-expanding home delivery market since Internet shopping has taken off. Traditional LSPs and B2B carriers are eager to enter and expand in this double digit growing market. Some are gaining reputation while others may need more distinct branding and the know-how to claim to be an

expert and do it well. Some e-fulfilment companies born in the dotcom bubble time enjoy the niche-player position with extensive warehousing network, real-time IT management systems and the first mover expertise. The predominant carriers who handle the biggest volumes, such as HDNL, N Brown, Parcelnet and Royal Mail have advantages of economies of scale, due to their catalogue businesses or unique post network. But express carriers offer more speedy services. Specialized carriers have found themselves to be in a market with less competition but tougher operating condition: volumes have to be consolidated even more.

The UK carrier market is fragmented. Most retailers and logistics companies use multiple carriers. There is a degree of variation in service quality, which has to be put into the context of which end of the market the carrier is in. The rapid growth of Internet shopping will attract new carriers, though there will also be mergers and consolidation. It is a changing and dynamic market and viable solutions are continuously being searched for and tested.

To answer the fifth research question: LSPs' experience and service offerings vary in the market which has a big impact on retailer's e-PDSQ. But LSPs' service quality variation is considered to be acceptable given the rates that companies and consumers are currently paying for these services. LSPs and retailers' relationships also affect the service quality. Committed and trusting relationship provides incentives and positively affects LSPs' service quality. The next chapter discusses the problems of the home delivery market and proposes possible solutions.

CHAPTER TEN: THE PROBLEMS AND CONSTRAINTS OF THE HOME DELIVERY MARKET AND POSSIBLE SOLUTIONS

10.1 INTRODUCTION

This chapter's main purpose is to provide answers to the sixth and seventh research questions. This chapter combines the two empirical studies, analyzing challenges and problems in the home delivery market and offering suggestions and solutions from both the demand and supply perspectives. Literature and industry marketing reports are referred to supplement the discussion.

10.2 PROBLEMS, ISSUES OF CONCERN AND CONSTRAINTS

10.2.1 Cost and Profitability Issues in Home Delivery Operations

Several interview questions related to the key determinants of cost to serve in home delivery. Most interviewees were very cautious about discussing the breakdown of the costs. They talked in general terms. The main expenditure is in warehousing and transport costs, within which the highest component is manpower, especially drivers. Drivers account for 60% of the total transport costs. LSP1 suggested that warehousing is the biggest cost for any logistics company in general. Maximizing the capacity of warehouses and achieving high utilisation are very important. Fuel is another key cost driver. Fuel prices were increasing at the time of the survey. The fixed costs, buildings and fleet are also very high. Maintenance has also become an issue. Motor Transport (Phillips 2006) reported that truck-operating costs have risen more than 1% since the end of 2005.

There are currently no detailed data of the costs of these operations available. The Freight Transport Association (2006) published a manager's guide to distribution costs and the report listed the average annual mileage and total vehicle cost of various vehicles (including standing costs such as insurance and depreciation, running costs such as fuel, tyres and maintenance and overheads). The author calculates the home delivery vehicle cost based on the following assumptions:

- most parcels are delivered in vans of 3.5 tonnes;
- a van runs 300 days per year
- a van can do up to 50 home delivery drops per day

	Vans of 3.5 tonnes -diesel	Vans of 3.5 tonnes -petrol
Mileage per year	25000	20000
Operating days per year	300	300
Mileage per day	83.3	66.7
Cost per mile £	0.4	0.51
Cost per day £	33.3	34
Drops per day	50	50
Cost per drop £	0.67	0.68

Table 10.1: An Example of Home Delivery Cost

Therefore Table 10.1 shows that if a 3.5 tonnes van runs 300 days per year and delivers 50 home delivery drops per day, the vehicle cost per drop is about £0.67. It is only an indication of how much the vehicle cost can be and the actual cost can vary depending on the delivery efficiency.

According to IMRG (2006b), it typically costs 15% less for a retailer to trade online than it does to trade on the high street. A further 5 to 10% of savings could be made if the delivery is very efficient. Carriers work on a very thin profit margin. SOT1 revealed that one third of carriers do not make any money and they lose money. A lot of them are financed by big investment companies so they can keep running at a loss. For some carriers, many of their home delivery customers are lossmaking under the current business model. The following paragraphs discuss issues that affect retailers' and LSPs' costs and profitability.

1. Carriers' Strategic Proposition

Carriers who are earning good profit are more likely to be much specialised ones. SOT1 gave the example of TNT who focuses on small customers and earns good profit. TNT trades on good service rather than price. "Carriers who try to do all things to all customers don't work well. They don't understand the economy of running business. The more business they take the more money they lose." SOT1's opinion was confirmed by LSP2. "The most profitable model would be that a carrier focuses on one area so to have economies of scale."

Those comments contradict some carriers' intention to broaden their service offerings and serve various customers. LSP5 recognised that there is an urgent need to expand product range and develop appropriate pricing structure. It is probably worthwhile for companies to review their cost and profit structures before they make new business decisions.

2. Retailer's System Integration

For multi-channel retailers, the integration of the IT system is very costly. RET2 considered the biggest problem they have had is how to integrate their home delivery system with the other systems such as warehouse management system and order management system. Catalogue companies have to integrate the catalogue channel with online channel. RET5, principally a catalogue business, considered the order taking integration of catalogue and online channel is quite a challenge.

3. Costs and Charging per Delivery

The actual delivery costs are normally higher than the delivery charges. LSP4 said that the cost per delivery varies from £12 or £14 to over £100 depending on the product type, weight and size, delivery address and delivery timeliness. Clearly most consumers pay less than that. RET3 suggested that they only charge consumers half or less of the delivery costs otherwise charges based on actual costs are too high to attract consumers to buy. Although for RET3 the delivery charges do not cover the real costs, a lot of savings are made by not having a high street outlet. Thus these retailers subsidize the delivery with the margin of profit. On the other hand, there are retailers who charge a premium and earn a profit out of delivery. This point will be further discussed in retailers' constraints section.

4. Product Category

Product category can have a big effect on retailers' profitability and return on investment. LSP1 gave the example of Amazon which has been expanding the product range to achieve higher sales per customer. In the 1990s Amazon invested US\$3000 per customer on average but it was very difficult to achieve reasonable return because few people would pay a few thousand dollars on books per year. By expanding product range and entering into high value electronic products market Amazon shortens the

payback time. Retailers which sell low value products need large volumes to achieve reasonable profitability.

5. Seasonality

Seasonality affects the delivery rate and is difficult to handle at peak times, which results in increased costs. Temporary staff are needed and overtime rates have to be paid. Short-term warehouse space may also have to be rented. In general retailers and carriers become better in dealing with Christmas deliveries as previous experiences have made them plan and control better.

6. Volumes

Large volume can earn retailers lower rates or discounts from carriers. However, SOT1 thought that it is a misconception that retailers have to get more and more volume to get the lowest price. He suggested that carriers give away their best prices even when the volume is low. Retailers do not necessarily get low marginal cost by significantly increasing volumes. Variable costs are high. More volumes mean more vans and drivers, which lead to high costs. Retailers need to balance the trade off between the benefits of single sourcing by giving large volumes to one carrier and the danger of being overly dependent on one source.

7. First Time Delivery Rate

The first time delivery success rate has an important implication on costs. IMRG (2006b) estimates that the cost of one re-delivery attempt is £1.5, and the cost of one undeliverable (with one attempted redelivery, customer service and stock holding costs) is £18.5. Home delivery is a thin margin market and with two or more delivery attempts, the margin is gone. SOT1 suggested that retailers should not just look at the price of the carrier; they should rather look at the service quality. There will be a cost saving if the first time delivery success rate is high. It costs money to redeliver as well as lots of time in the call centre answering consumers' enquiries about their delivery problems. High first time delivery rate can translate into customers' loyalty and more sales.

8. Drops Per Vehicle Per Trip

The more drops per vehicle trip has, the better economies of scale can be achieved. RET2 said: “An important measure we take to influence cost is how many orders we put into one vehicle. We aim to increasing drops per vehicle per trip.” Better transport route planning can enhance efficiency and increases trip drops.

9. Customer Service and Communication

Good customer communication reduces misunderstanding and call time, while increasing the chances of successful delivery and customer retention rate. This will be discussed in more detail in the next section.

10.2.2 Consumers: Service, Responsibility and Complaints

Home delivery is considered to be a very demanding area in logistics. Consumers demand good service but may lack an understanding of the implication on costs for a good home delivery service to be offered. In some cases, consumers themselves are responsible for delivery failures. They may not stay at home and wait for the delivery when it is due. They may type the wrong address by mistake. LSP4 said: “On a separate issue, never underestimate consumers’ changing their minds. They may not stay at home for agreed delivery which causes lots of hassles to us.” The Retailer Logistics Task Force (2000) pointed out the conflict between consumers’ life style, their desire for freedom and the need to be at home for deliveries. Usually the customers do not suffer a penalty for not being at home to receive a delivery when they indicated that they would be.

To make home delivery work, consumers need to be aware of both their rights and responsibilities and better communication and interaction are needed. IMRG has taken part in clarifying retailers’ and consumers’ responsibility and rights. In the ‘Internet Delivery Is Safe’ (IDIS) project, IMRG puts an IDIS logo on the websites of retailers who are accredited. If an accredited retailer violates consumers’ rights by providing sub-standard service, IMRG can discredit the retail by taking the logo off its website. An online shopper with an IDIS-accredited retailer has the right to (IMRG 2006d):

1. “Clear delivery information before you place your order;
2. Convenient delivery options;
3. Notification of any delivery limitations / conditions;
4. Charges that are complete and simple to understand;
5. Access to information on your order progress;
6. Delivery within the agreed time frame;
7. Helpful support with failed / late / attempted deliveries;
8. Your goods arriving in good condition;
9. A clear returns process.”

Along with the rights consumers enjoy from accredited retailers, IMRG also sets up principles of responsibilities for consumers to comply with. And it is widely welcomed by retailers. For the first time consumers’ sense of responsibility is being promoted: what consumers can do when they shop online to make their experience better. IMRG promotes the following responsibilities for consumers (IMRG 2006d):

1. “Check delivery details carefully;
2. Ensure all requested information is correct and complete;
3. Read and agree to the terms and conditions;
4. Try to be delivery-friendly: if you are likely to be out at the time of delivery, try to make a safe alternative arrangement (e.g. to a neighbour or workplace);
5. Have realistic expectations: allow enough time for goods to arrive (picking, packing, shipping - and sourcing, if not in stock);
6. Avoid unnecessary / premature enquiries that waste time and money: take advantage of any online support tools (e.g. FAQs, tracking);
7. Be aware that it takes longer and costs more to deliver to some remote areas;
8. Appreciate that retailers don't 'lend' goods but 'sell' them: if you simply decide you don't want an item, expect to pay the return-shipping bill yourself: generally, returned items must be unused, in good condition and retain their original packaging;
9. Agree in advance with the retailer if you are going to return goods that are faulty or incorrect, then return the goods in accordance with the retailer's instructions: expect that you may be required to pay for return postage, which will usually be refunded by the retailer once the problem is confirmed.”

Good customer service as well as quick and efficient handling of consumer complaints are crucial to online selling as consumers do not have the face-to-face interaction with store staff. An IMRG report (2006b) predicts that if efficiency rates recorded in 2005 prevail, half of the 7 million complaint calls will be delivery related in 2006. Most retailers have their own call centres and handle consumers' complaints. Some delivery related enquiry and complaints might be transferred to logistics companies and carriers. However, Amazon and a few others do not seem to take consumers' calls: almost all the enquiries are dealt in emails. The following are a few common complaints from consumers.

- 'Where is my parcel?' LSP5 suggested that half of these enquiries are made before the promised delivery time and people just need reassurance. Parcel losses are rare but do happen, especially when a parcel is left outside the house. McKinnon and Tallam's research (2003) showed that 'door stepping' is convenient and less costly to carriers but has the lowest security degree.
- Some consumers may want to change delivery time or address, which is too late and a vehicle may have been sent out already. People may also want to change the delivery address before a parcel is redelivered. But carriers are not allowed to do it and they can only deliver to a specific address given by retailers.
- Leaving goods with neighbours. Some people do not speak to their neighbour for a long time and it is embarrassing to have to pick up the goods from such a neighbour.
- On-time delivery. Some deliveries are late and do not show up on the day they are supposed to.
- Damage, especially furniture damage. Some people would complain the damage to their floor or other things and ask for compensation.
- Missing items. Consumers may find items missing from an order.

Joyce (2005) reported that of customers who issued a complaint, 54-70% would buy again if their complaints were resolved. The figure goes up to 95% if the customer feels the complaint was resolved quickly. The above enquiries and complaints can be effectively reduced by introducing online tracking and tracing system, obtaining pre-

approval of delivery options from consumers, pre-arranging delivery time and improving picking and packing accuracy. Unfortunately, retailers and LSPs have constraints, which may hold them back from providing high quality service. These problems and constraints will be examined in the next section.

10.2.3 Retailers' Constraints

1. Retailers tend to underestimate the real cost of e-fulfilment.

This constraint is part of the normal trade negotiation and is not an exclusive problem in home delivery. The constraint does not apply to all retailers, but a significant number of retailers could understand their real costs better. Many multi-channel retailers do not have full financial analysis of how much it costs to sell online and delivers to households. RET3 said: "Home delivery operation is believed to have a good return on investment as there is no high street outlet cost. Retailers need to be more aware of the real cost of online shopping as volumes going through stores and online channels may change and shift balance." LSP1 felt that some retailers' lack of understanding in real cost to do home delivery makes it difficult to agree on commercial contracts. "Delivering to store is very different from fulfillment to houses. Some retailers don't understand the differences and difficulty. There is mainly fixed cost associated with store operations, but variable cost with online operations. More deliveries mean more vans and more men."

Open book contract is common in the LSP market which enables retailers to see costs clearly. But this method is used in dedicated contract only and less appropriate in home delivery, where most contracts are based on shared use. Thus it is difficult to allocate cost between customers.

However, RET1 was very confident that they know their costs very well. He said: "We absolutely understand every pound and penny. That is what we do and all we do." IND2 suggested that it is less true now than five years ago to say retailers do not have a clear understanding of costs. He suggested that when marketing and advertising are included, it is very difficult to differentiate between overall cost of promoting the brand and the cost of doing that from a particular channel.

IMRG and Metapack are developing a home delivery cost-benefit analysis model. The web-based interactive tool, if successfully implemented, will help retailers to have a better understanding of the costs and benefits.

2. Under-investment in the home delivery

A few interviewees suggested that retailers put too much attention on the web design, special offers, marketing to bring in consumers rather than on the order fulfilment to retain consumers. Retailers focus on customer conversion rather than retention. An example may be RET5 whose marketing and catalogue expenses account for 20% of the sales revenue, while warehousing and delivery account for only 15%. Commenting on these figures, SOT1 said: “Our experience shows that retailers will be better off if they reverse these ratios.” LSP1 emphasized on warehousing. “Retailers have to make sure that their whole processes are reliable. Not necessarily the distribution, it is the middle chunk, that they could improve their service. Things such as warehousing, picking, stocking can go wrong.”

Since 2005, with the significant increase in online sales, retailers have started to invest heavily in the online channel. Half of the interviewed retailers confirmed that they are either going through a strategic review or in the middle of implementing a new system. RET3 said: “When the scale of online shopping grows significantly, there needs to be a certain level of investment in warehousing, in a separate management team, in fleet etc.” Retailers attach different importance to delivery issues across this sample.

3. Technological constraints

Some retailers are slow in adopting advanced technology. For example, two interviewed retailers did not have order tracking system at the time of the survey, which puts lots of pressure on their call centres. The self-serving online order tracking systems which need to be set up in association with LSPs can effectively reassure consumers, reduce retailers’ workload and enhance consumer satisfaction. If consumers order products directly despatched by suppliers, systems connection and order tracking become even more important.

Measuring demand from the Internet is very difficult. RET1 said that it is very challenging to get a full picture of demand, then forecast and get to the next stage. Some

retailers are developing new systems to improve the forecasting and real-time stock availability.

4. Consumers' expectations difficult to manage and meet

Managing customers' expectations around delivery and having that message clearly put on the Internet is difficult. But not many unsatisfied consumers would take the trouble to pick up the phone and tell an e-retailer how it can improve its service. They can easily click on another website or just put a message on a comparison website such as Kelkoo warning others not to be bothered with the e-retailer that he feels unhappy with. As a result this e-retailer does not just lose one customer; it loses more potential customers. Words spread quickly online. E-retailers have much less control over the online channel than the conventional channels.

What makes e-retailers' life even more difficult is the high level of benchmarking set by e-grocers and a small number of pure players. The grocers such as Tesco and Sainsbury are raising customers' expectation in delivery by offering very narrow time window. RET2 said: "Grocers can deliver within an hour's time window but how can we do this? Consumers don't differentiate products. They just want the highest delivery standard." The perishable nature of food and high local drop density make possible for grocers to offer a short time window but very few non-food retailers can do this. Non-food retailers have to source from regional or national warehouses.

Amazon's advanced system was used by RET1 to exemplify the challenges faced by multi-channel retailers. RET1 considered Amazon as a benchmark, who is miles ahead of them in terms of its flexibility and strength in keeping its consumers informed. RET1 suggested that consumers' expectations are established but retailers have difficulty in managing the expectations.

5. Managing the relations with LSPs and carriers

Finding the right logistics partner and carrier to work with is considered to be a challenge. Initially there may be various problems. Proper communication, an understanding of partnership and mutual commitment to solving problems are crucial. In good relationships, retailers and LSPs grow together and achieve a win-win result. However, some retailers have had failed LSP experience before. RET2 used a LSP who

had a dedicated team to do warehousing and delivery. But the LSP did not have the scale and experience to do deliveries for RET2, which then spent considerable money correcting things and training them. RET2 said: “How we get our parcel carriers to provide good service for us retailers is a big concern for us. We want to drive the proposition forward and we have been competing with other retailers.” When things go wrong, retailers and LSPs can adopt a proactive attitude and try to solve problems rather than blame each other.

Retailers can benefit a lot from a long-term and good relationship with LSPs. LSP1 said that its relationship with clients varies greatly. It provides the best service to clients with whom it has strategic partnership. LSP1 said: “Sometimes LSPs would do things that you wouldn’t expect them to, depending on the state of relationship development with retailers.” Good partnership probably needs higher up-front cost in the beginning to cultivate. But once relationship has been established, it is smooth and less costly in the long term.

6. Delivery charge

The use of delivery charge is increasingly becoming a two-edged sword: it is not just used for covering delivery cost; it can be used for promotion and improving profit margin. Free delivery over a certain order value is offered by some retailers as an incentive to encourage consumers to shop more. Premium delivery charge applies on high value product or purchases made on urgent basis. Many consumers look for price first so retailers are constrained by the delivery charge that consumers can accept. IND1 suggested that many retailers have low fulfilment budget and buy the cheapest delivery method from carriers. He thought it was unwise as poor service quality may cause damage to their branding. He said: “What is the difference of investing in a physical store and delivery? Not much... A bad delivery can make the whole shopping experience collapse.”

Retailers who sell low value products could not use delivery charge to increase their margin because it would make them uncompetitive. There are retailers, however, especially those who are direct sellers of high value electronic products such as computers and televisions, would enforce a high charge and extract profit from delivery. Delivery charges are manipulated as a sophisticated marketing tool, catering to human nature. Consumers seem to accept a very high delivery charge imposed on them for a

high value product or an urgent purchase, in which case retailers get additional margin. However such a conduct is not without risks. The more consumers pay for the delivery, the more likely that consumers get very poor perceptions if the service quality is not good. As a result retailers may lose consumers.

10.2.4 Logistics Companies' and Carriers' Constraints

1. Cost

Many LSPs and carriers said that they would offer any delivery options consumers want. But if a retailer tells carriers to do every delivery in the way consumer wants it, it will cost the retailer a fortune. Carriers have to sell the product at a price level that the market is willing to pay. Some retailers may not want next day delivery and they are happy with standard two to five days delivery. Carriers need to match product offerings with market prices. Quoting LSP1's comment: "That is probably the biggest issue in the industry now: everybody wants a better service but nobody is prepared to pay."

Warehousing cost is another issue for LSPs. Sometimes LSPs do not have spare warehousing capacity so when they get a new client they have to acquire additional warehouse space. LSPs normally need to acquire new assets, which grow proportionally with their clients. Thus LSPs need to cultivate long term relationships with clients and get longer term contract. LSP1 mentioned that sometimes they have to negotiate with a client without actually knowing where they can get a warehouse. They do not know for sure how much profit they can get when signing the contract.

2. Volume and drop density

Most logistics problems today have something to do with scale. LSPs need to build enough scale of volume to achieve profitability. Just like some retailers cannot afford to deliver some of their products, carriers cannot afford to deliver anywhere in the UK on a daily basis. Carriers are limited by their fixed capacity distribution and delivery network. The ideal situation is that carriers have a system and infrastructure that would allow them to deliver parcels in the most cost-effective route to consumers. A lack of volume means carriers have to force consumers to accept the delivery on the date that suits carriers rather than consumers. LSP5 called it a chicken and egg situation. The more people are buying from the Internet the cheaper it will be for everyone. LSP4

considered itself to have sufficient volume and infrastructure, which enables it to keep the price down and attract clients.

The carriers' market is fragmented with lots of competition going on. Many interviewees agreed that the market has to be consolidated with fewer players and bigger market shares for each of them. But the market is not mature yet: online shopping is increasing sharply and more companies will spot business opportunities and get into the market. The existing carriers are ambitious and want to expand further. Everyone knows they need more volumes and higher drop density, but it is proving difficult to achieve.

3. Lack of internal and external communication

Within LSPs' organisations, there may be inadequate internal communication between the operations department and marketing department. Marketing department always wants as broad a variety of service offerings as possible. They want customers to be able to choose whatever options available. But operations department has to consider practical issues and operational cost. Underneath there is the classical inter-functional conflict (Christopher 1998). Good internal communication and understanding enable LSPs to position themselves better in the market and deliver services that they promised.

Externally, LSPs need not only to deal with their clients, but also the consumers. Some LSPs are concerned with the lack of contact with consumers as retailers may want to have ultimate control of their customers. LSP4 suggested that consumers should be able to go to a carrier's website and choose a date during the order placement. This online booking facility would allow consumers to link with carriers directly. LSP6 expressed concern that sometimes retailers do not properly advise consumers when the order is going to be delivered. Although retailers pay for redelivery, it still costs carriers money. A direct connection between carriers and consumers can make delivery process more efficient.

4. Market position and differentiation

In the home delivery market, there are twenty national carriers and many smaller ones. Some carriers have differentiated themselves as providing specialised service or focusing on a particular customer sector. Some others are still in the process of looking

for appropriate service range matching market demand and costs. There are also carriers who expand quickly and offer a broad range of service options. How to differentiate themselves effectively is a huge challenge.

10.3 DISCUSSION BASED ON THE E-PDSQ FRAMEWORK

Comparing the consumer survey and company interviews, reveals that most issues consumers felt unhappy with are being addressed and emphasized by retailers and LSPs. The consumer survey shows that respondents' satisfactions were the lowest in the following e-PDSQ framework variables: specify and deliver in time slot, order tracking and tracing, prompt collection and replacement of returns; while variables of condition and availability dimension had much higher consumer satisfaction. Delivery options, timeliness and returns were also among retailers' and LSPs' biggest concerns. The Verdict (2006, see Figure 10.1) e-retail and home delivery report showed strikingly similar result: more than 90% people were satisfied or fairly satisfied in the home delivery aspects of order accuracy, order condition, but around 85% of people were happy with delivery on time, and just over 60% of people were happy with ease of return. Overall speaking, customer satisfaction has been improving over the past two years.

The following sections discuss these issues based on the e-PDSQ framework from the perspective of what consumers want, what retailers and LSPs offer and what can be improved.

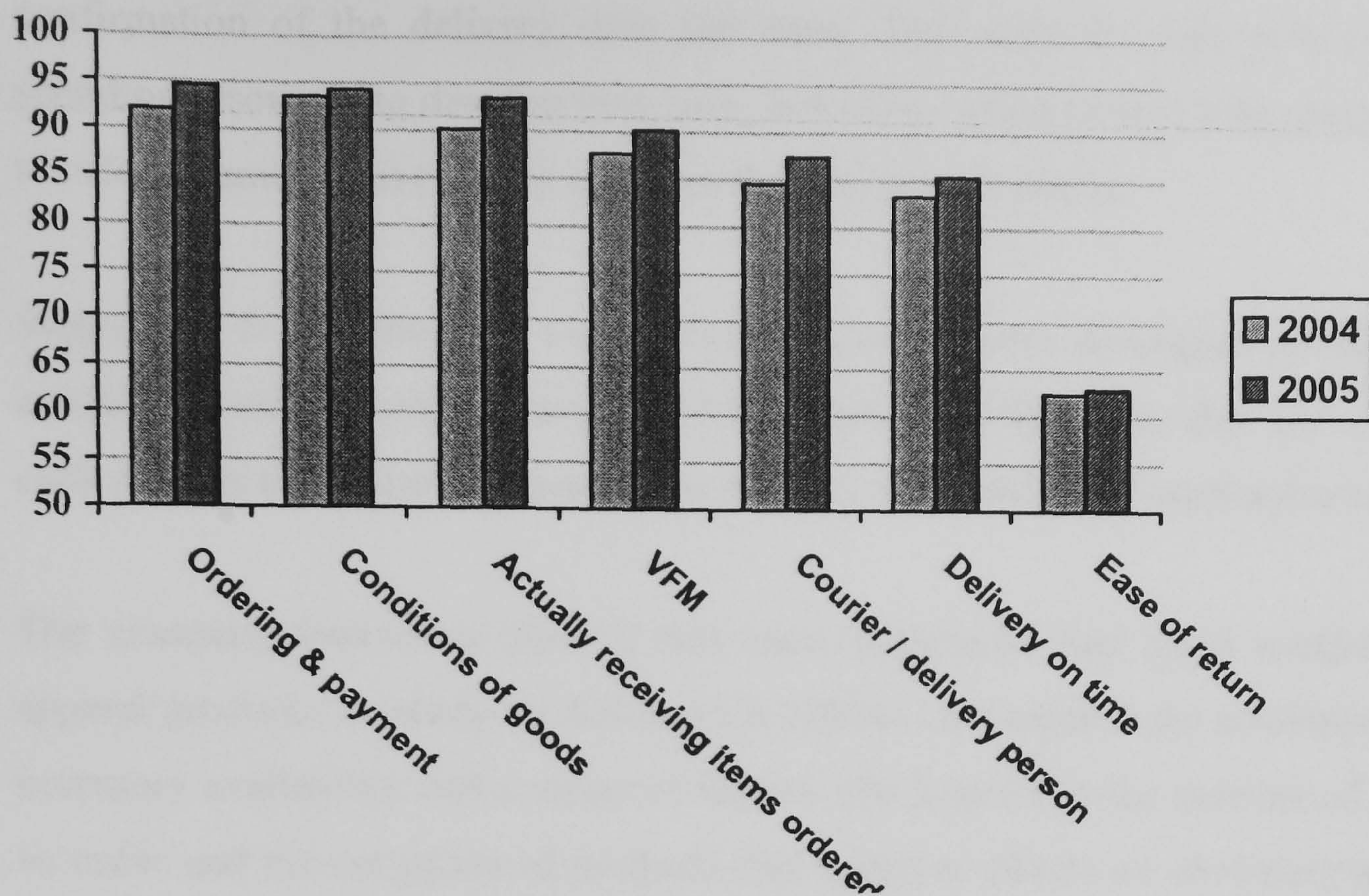


Figure 10.1: Percentage of Consumers Were Satisfied or Fairly Satisfied in the Home Delivery in 2004 and 2005

(Source: Verdict E-retail Home Delivery 2006, cited from Woodhead 2006 p.4)

10.3.1 Recommendations regarding Availability

In the availability dimension, respondents had low satisfaction in order checking, i.e. the ability to track and trace orders online. But pure players performed better than multi-channel retailers significantly in this variable. The interviews confirmed that most multi-channel companies do not have tracking systems yet. Thus there is a big gap between what consumers want and what they are offered.

Suggestion 1: Retailers, especially multi-channel retailers develop an online order tracking systems or provide a link to the carriers' websites to create visibility in the home delivery channel and for consumers to track orders. Retailers involve carriers to communicate with consumers as much as possible.

For retailers who have difficulty in developing such a system, they can resort to software applications such as IMIN that operates alongside the existing ordering systems of retailers (Imin 2006). The IMIN system enables timely contact with the customer by email or text message during the fulfillment process, ensuring that the customer is informed about their order status at relevant times and most importantly informing them when the goods are ready to despatch, offering choices and

confirmation of the delivery date and time. This software can save retailers from spending resources to develop their own, but close collaboration with carriers is needed to offer a named delivery date and time that consumers prefer.

Suggestion 2: Retailers use order confirmation software developed by third parties to contact consumers and arrange delivery time. Retailers can also use email, phone calls or texts to inform consumers the delivery date and time; send a few reminders.

The company interviews showed that most companies had good availability except apparel products. A study by Rabinovich (2004) investigated the relationship between inventory availability and a series of factors. He found that the number of units within an order and the net prices of products had negative effects on inventory performance. He did not find retailer's size and experience have evident impact on the inventory performance. He suggested that retailers should promise a fulfilment performance that closely matches their high level of actually performance so long as this achieves certain minimum standard, thus to narrow the gap between promised and delivered service.

Suggestion 3: Retailers do not over promise a quick delivery without a good availability.

If retailers do not have good availability yet promise a quick delivery, they may not be able to fulfill it within the agreed time period due to out-of-stock situation. When consumers' expectations are high, they are more likely to have a very low perception if retailers did not deliver their promises.

10.3.2 Recommendations regarding Timeliness

As to the timeliness dimension, consumers' satisfaction was very low in specifying time slot and delivery in time slot. Specifying delivery date, delivery on the day arranged and quick delivery had higher satisfaction. The company interviews showed that the most common service is standard 3 to 5 days delivery. Timed delivery is rare except for two-man products. Snow Valley online research (2005) on e-retailers' delivery offerings found the following information summarised in Table 10.2 and 10.3.

Number of delivery options advertised on websites	% Retailers
1 option (i.e. no choice)	49
2 options	28
3 options	11
4 options	6
5 options	2
6 options	2
No information provided	2

Table 10.2: How Many Delivery Options Did the Retailer Provide?

(Source: Snow Valley 2005, P.7)

Time options advertised on websites	% Retailers
Yes – specify one hour slot	1
Yes – specify two hour slot	2
Yes – choice of 3 time windows	2
Yes – specify AM	6
Yes – choice of AM or PM	1
Customer is telephoned post-purchase to arrange	7
No time of day options are given	79

Table 10.3: Was It Possible to Choose a Specific Time of Day for Delivery?

(Adapted from Snow Valley 2005)

Clearly, some retailers do not offer consumers the options they want. Although most consumers buy on price and prefer free delivery, there are people there who are happy to pay for convenience. The consumer survey showed that over 10% of respondents were happy to pay £3 to £6 for weekend and evening delivery and 2% were willing to pay £7 to £10. Early morning delivery is getting more popular, a trend indicated by respondents and confirmed by retailers.

Retailers and carriers are concerned about the costs of providing premium delivery. However, once they start to offer more options, they may find there are good demands for these options, and eventually there may be enough volumes to support the operation.

Suggestion 4: Retailers provide more delivery options and consumers who are happy to pay will choose delivery options with more specified date and time. The surcharge they pay will compensate for the high cost of delivery.

The consumer survey showed that order lead time had strong positive association with overall consumer satisfaction. Even if retailers promise a standard delivery, if the order can be quickly dispatched and delivered, it will exceed consumers' expectation and

enhance customer satisfaction. Figure 10.2 shows why consumers purchased from one site rather than another. Among the eleven reasons listed, three were directly delivery related: fast delivery, deliver when I want it and can return goods easily.

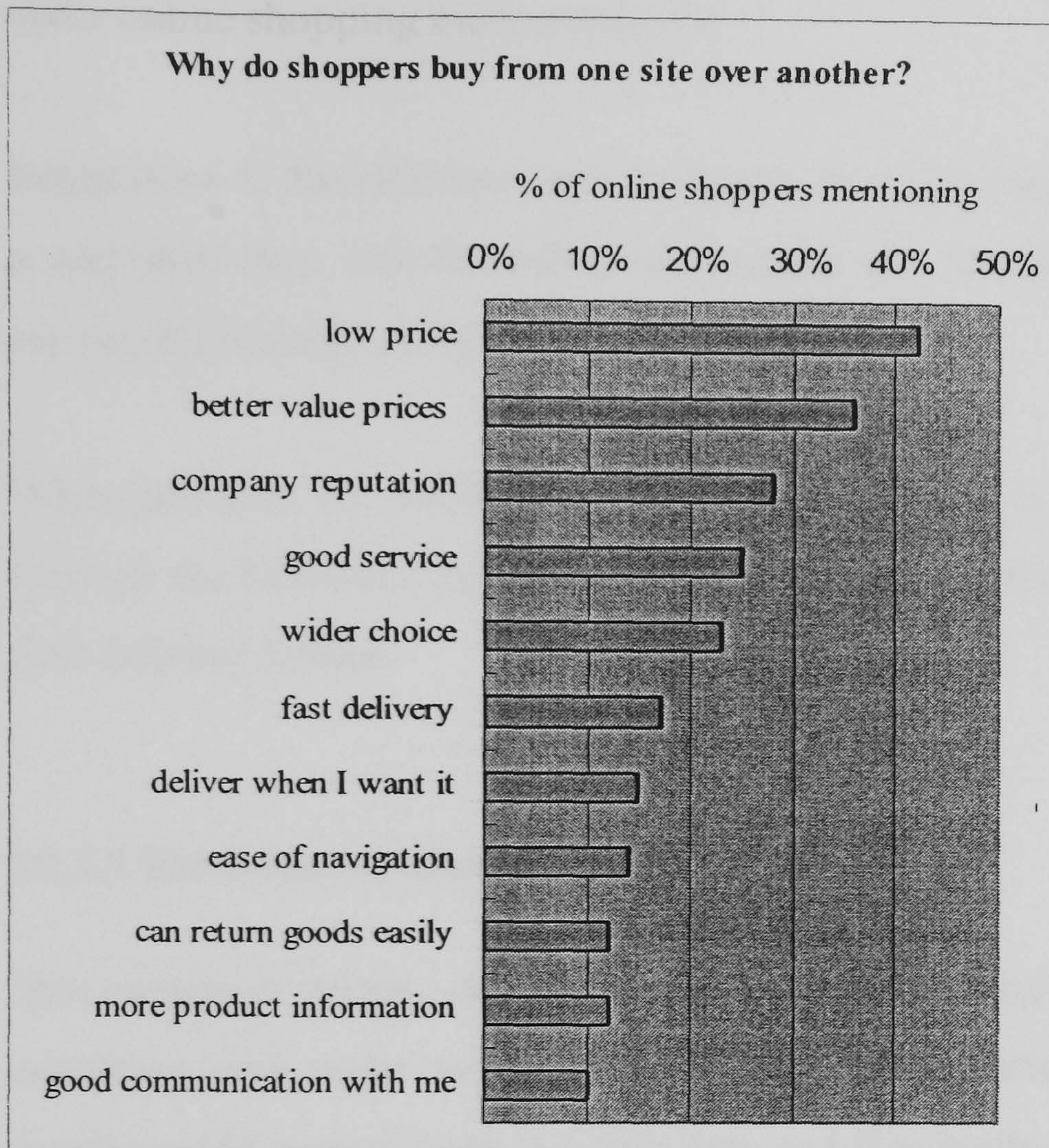


Figure 10.2: Why Do Shoppers Buy from One Site over Another?

(Adopted: Verdict 2005)

Suggestion 5: Given the availability is guaranteed, quick dispatch and delivery can secure greater customer satisfaction.

First delivery success rate is at the top of retailers' and carriers' agenda. IMRG (2006b) evaluated that on average, 12% of deliveries have to be redelivered, which has a large cost implications for retailers and carriers. To improve the first delivery success rate, the following suggestions are given:

Suggestion 6: Before the delivery, ask consumers about alternative delivery options if nobody is at home; give them more choices.

The consumer survey shows that convenience is one of the most important factors that consumers shop online. The interviewees also agreed that empowering consumers and recognizing their needs for multiple shopping choices are key to providing satisfactory services. Alternative delivery options provide more convenience to consumers and make online shopping more attractive.

Suggestion 7: Small items such as books, beauty products or gifts can be packaged in a way that they can be delivered through the letterbox if possible, i.e. minimizing packaging without compromising the quality.

When products are small enough to be packaged in a way that they can be delivered through the letterbox, companies should use this opportunity which can greatly reduce first delivery failure.

10.3.3 Recommendations regarding Condition

The consumer survey showed a high consumer satisfaction on order accuracy, order condition and order completeness. Only one purchase out of the 167 purchases mentioned by respondents was furniture and that partly explained the low order damage rate in the survey.

Suggestion 8: Retailers and carriers use good packaging materials which can stand for two delivery trips at least, tighten packaging requirement and improve picking and packing quality.

The consumer survey showed that one third of consumers may not stay at home to receive deliveries and the company interviews suggested that at least 20% of parcels have to be redelivered. Thus it is important to have robust packing materials to minimize the damages.

Suggestion 9: Use specialised service for bulky and fragile products and train drivers to handle products carefully.

This point looks obvious but it took LSP2 a whole year to learn this lesson. After suffering a high damage rate of furniture delivery, the LSP advised its client to use a specialised carrier which greatly reduced the damage and return rate.

10.3.4 Recommendations regarding 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 returning methods. Woodhead (2006) shows that once a customer has decided to return an item, they want it out of the house as quickly as possible. Table 10.4 summarises the returns options available for unwanted goods (Snow Valley 2005). Nearly half of the retailers offer two or three returning options.

Returns Options advertised on websites	% Retailer
Courier, instore or post	7
Courier or post	7
Courier or instore	7
Instore and post	12
Courier only	5
Post only	46
Hand item back to delivery courier	4
No info / see paperwork / contact customer services	12
Total	100

Table 10.4: Returns Options

(Source: Snow Valley 2005, p.18)

Suggestion 10: Use effective labeling and address checking system to increase delivery accuracy.

Product damages and wrong labelling or addresses are two main reasons causing return. Using good labelling and address checking system can increase delivery accuracy, thus reducing return.

Suggestion 11: Returned products are dealt with properly so they can be repaired, repackaged and resold.

Some products are returned simply because consumers do not want them or they are in the wrong size or color. Other may have minor defections that can be fixed. These products should be treated properly to be resold.

Suggestion 12: Once retailers get the return request from consumers, they should arrange goods be promptly returned or replaced. Clear instructions should be given to consumers if they want to return goods themselves.

The consumer survey showed that prompt collection and replacement of returned products are greatly appreciated by consumers. Retailers should take this opportunity to give consumers a good impression.

Suggestion 13: Retailers recognize the security risks of returns and take measures against theft and false claim.

Occasionally, there are consumers to make false claims or steal products and return packages only. Retailers and LSPs need to check the returned products when they collect them.

10.3.5 Recommendations Related to Costs

Although logistical issues can be powerful differentiators, the above sections described a few gaps between what consumers want and what could be done commercially. Retailers and carriers are pressured to improve service offerings with reduced costs. A high operational cost and tough retail environment make retailers very cost sensitive; technological advancement needs investment; and retailers have to strike a 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. In many cases goods are sold at discounted prices online so volume is crucial. Carriers need to be flexible in the operations and concentrate on resource planning. Figure 10.3 shows the challenges they face, which brings about the suggestions followed.

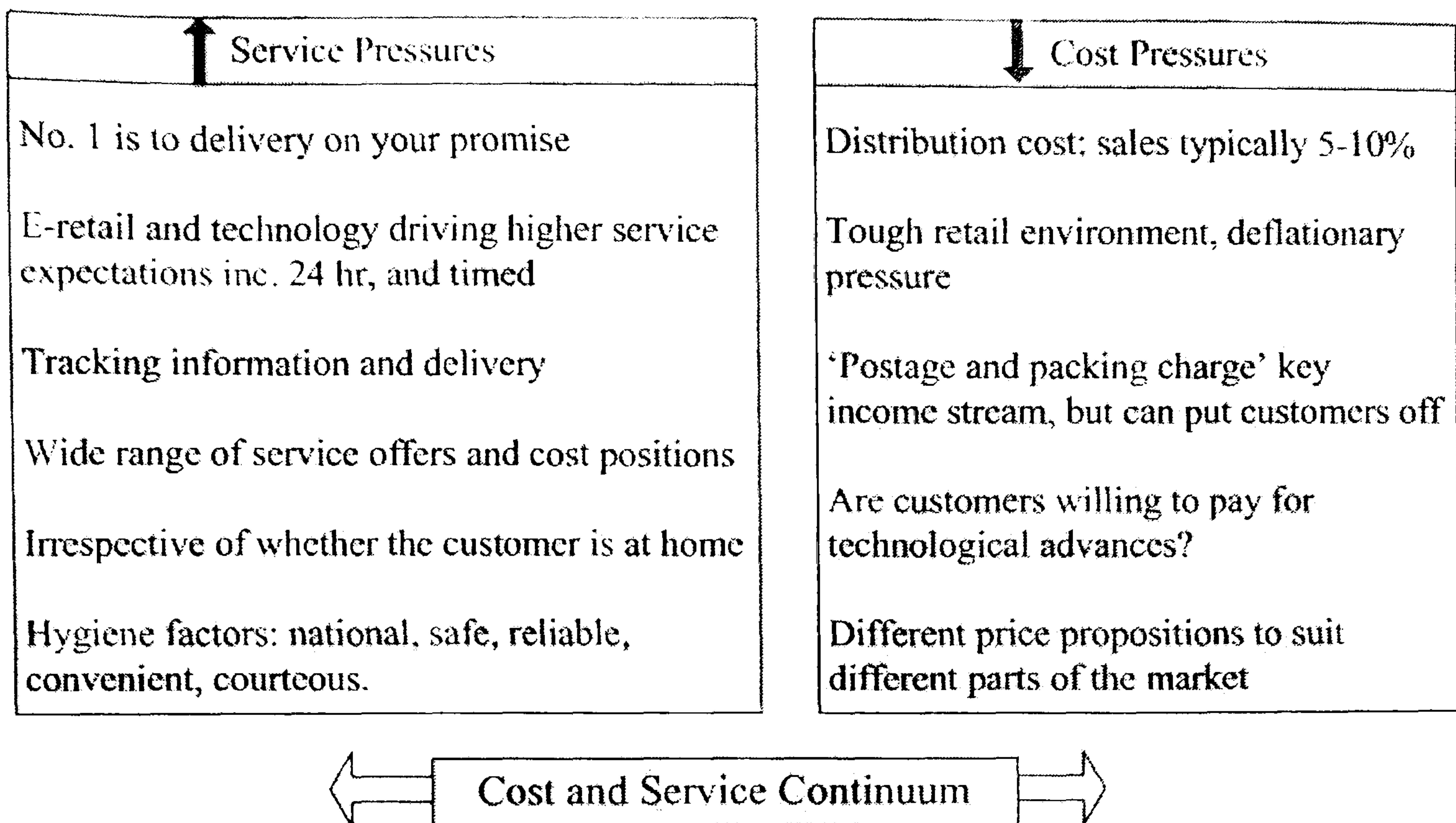


Figure 10.3: Cost and Service Continuum

(Source: Woodhead 2006, p.6)

Suggestion 14: Retailers create mass and volume to amortize the fixed costs of distribution centres, fleets and headquarters and make up for the low margin.

Suggestion 15: Flexibility of resources for carriers is key so that dedicated, shared and subcontracted services are mixed to optimize warehousing and fleet resources.

Suggestion 16: Quick resolving of consumer complaints not only brings cost down, but also increases customer satisfaction and retention rate.

10.4 A MULTI-CHANNEL APPROACH

10.4.1 Multi-channel Opportunity

The consumer survey suggested that pure players were perceived to provide better e-PDSQ than multi-channel retailers. Most of the interviewees showed understanding of this result and they explained that pure players are much more focused on online channel, as it is all that they do. Multi-channel retailers tend to treat online channel as secondary compared with stores. The lack of commitment and attention, the complicated integration requirement between different channels and the less advanced

technological systems make multi-channel retailers lag behind pure players for now. As Reda (2003 p.64) argued, “everybody seems to have a multi-channel presence today, but not everyone has really thought about how the e-commerce channel links to their traditional stores...”.

However, most interviewees still considered multi-channel to be the future of retailing as multi-channel retailers have much more exposure to consumers and are more flexible in trading format, which serve needs of different people. A retailer with a good multi-channel strategy is viewed as a single retail entity with complementary distribution alternatives (Bermen and Thelen 2004).

The interviewees’ prediction that multi-channel retailers will prevail eventually is in line with the literature. Retailers can have better performance based on integrated retail strategies wherein e-retail and stores serve complementary roles. Some commentators in the early 2000 speculated that multi-channel retailing was the future of shopping (Dennis et al. 2002). An Ernst & Young report (2000) suggested that conventional retailers could strengthen their position by incorporating the Internet as part of their retail strategy. Verdict (2001) and the British Council of Shopping Centres (2001) forecast that multi-channel retailers would take the lead eventually and continue to be successful. A positive commitment to online retailing is paramount for legacy retailers as the huge growth in online sales have already resulted in a redistribution of revenues among channels or among members of the same channel.

From the cost and profit perspective, a US study conducted by The Boston Consulting Group (Silverstien et al. 2001, cited from Anderson et al. 2003) showed that pure players had the highest fulfillment costs and marketing costs compared with both traditional and catalogue retailers. Catalogue retailers seemed to have the best chance to achieve profitability (see Table 10.5). Min and Wolfinbarger (2005) examined the sales data of e-retailers in the United States between 1999 and 2000 and they found that multi-channel retailers have higher market share and higher marketing efficiency than pure players. Shop.org (2001) reported that multi-channel consumers shop four times more frequently than online consumers which may result in higher revenue for multi-channel retailers.

	Pure players	Stores	Catalogues	All companies
Direct cost as percent of revenue				
Cost of goods sold	85	82	70	76
Fulfillment	29	22	5	10
Customer services	8	8	1	12
Marketing costs	119	36	6	24
Contribution margin	-141%	-48%	18%	-12%

Table 10.5: Contribution Margins (Excluding Depreciation and Overhead)

(Adapted from Silverstien et al 2001)

Aberdeen Group in the US (2005) did a benchmarking study on retailers' sales performance and they concluded that best-in-class retailers in sales typically operate in three channels: stores, the Internet and call centers/catalogue. Multi-channel consumers were reported to be more profitable than single-channel consumers (see Figure 10.4).

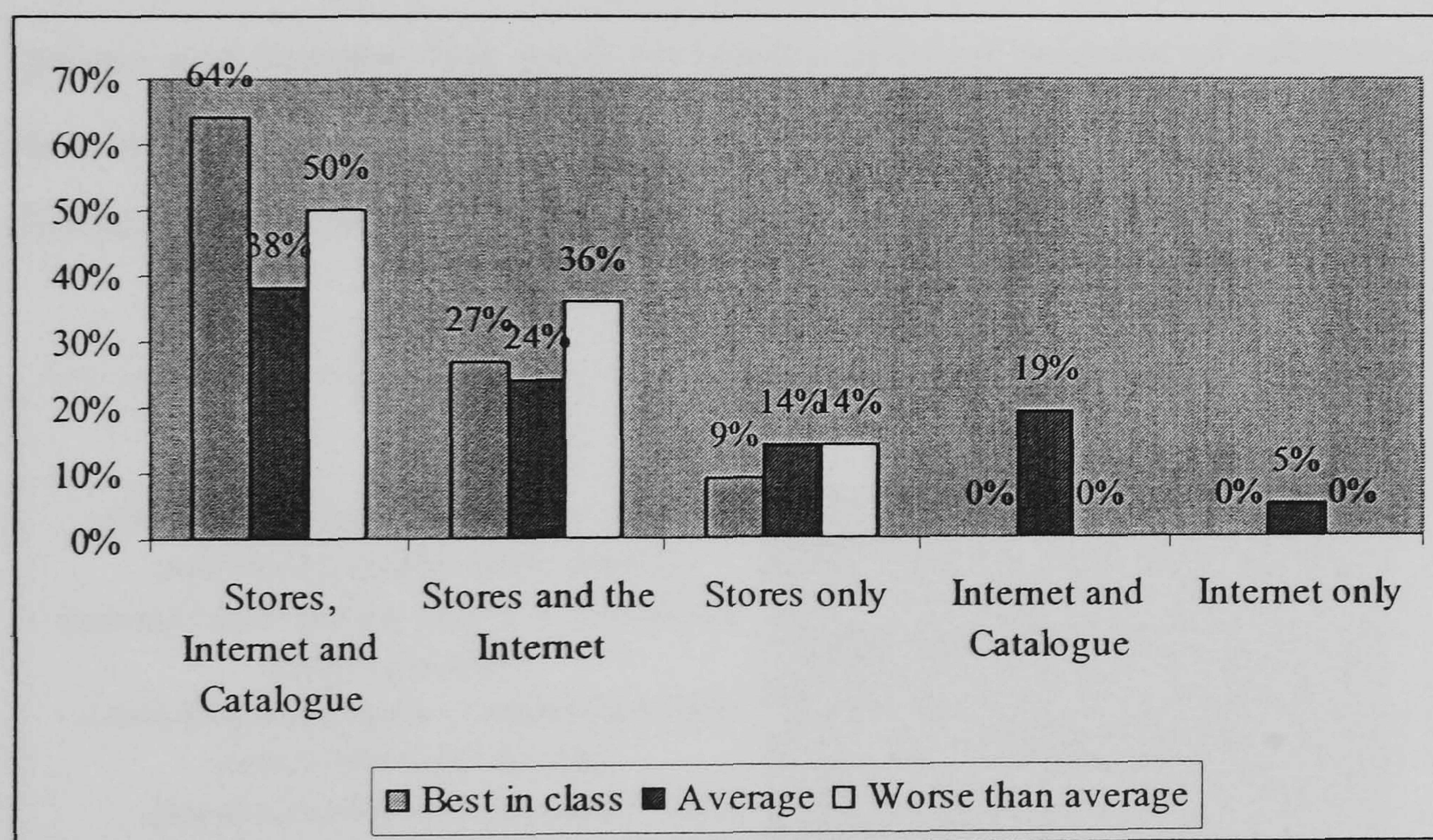


Figure 10.4: Best-in-Class Retailers Use More Selling Channels

(Source: Aberdeen Group 2005, p.5)

A study by Royal Mail in Christmas 2005 (Internet Business News 2005) revealed that 60% of survey respondents (sample including both multi-channel retailer such as John Lewis and pure plays such as Firebox.com) sent catalogues or brochures to customers to increase online sales and the use of catalogues by retailers had been multiplying over time. This is another example of how retailers take advantage of a multi-channel proposition to boost sales.

10.4.2 Pressures on Multi-channel Retailers

The multi-channel opportunity brings new pressures to retailers as Chapter Eight discussed the culture and consistency issues faced by traditional retailers in their transformation to embrace the Internet era. Multi-channel retailers have to make an effort to integrate their systems as suggested by Nicholls and Watson 2005: “The elements of the marketing mix need to be managed consistently across all distribution channels if brand value is to be maintained” (p.430). Barlow et al. (2004) argued that retailers’ challenge should have long shifted from answering why to develop a multi-channel strategy to how to develop it. First of all, retailers should understand multi-channel consumer needs. Figure 10.5 shows a few pressures driving retailers to recognize consumer expectations and integrate multi-channel initiatives. Consumers expect seamless purchasing experience across channels. They are empowered with more options and become less loyal to brands and less tolerant of mistakes. Retailers also have to deal with the unpredictable short-term demand within any single channel. Multi-channel selling environment is becoming more competitive.

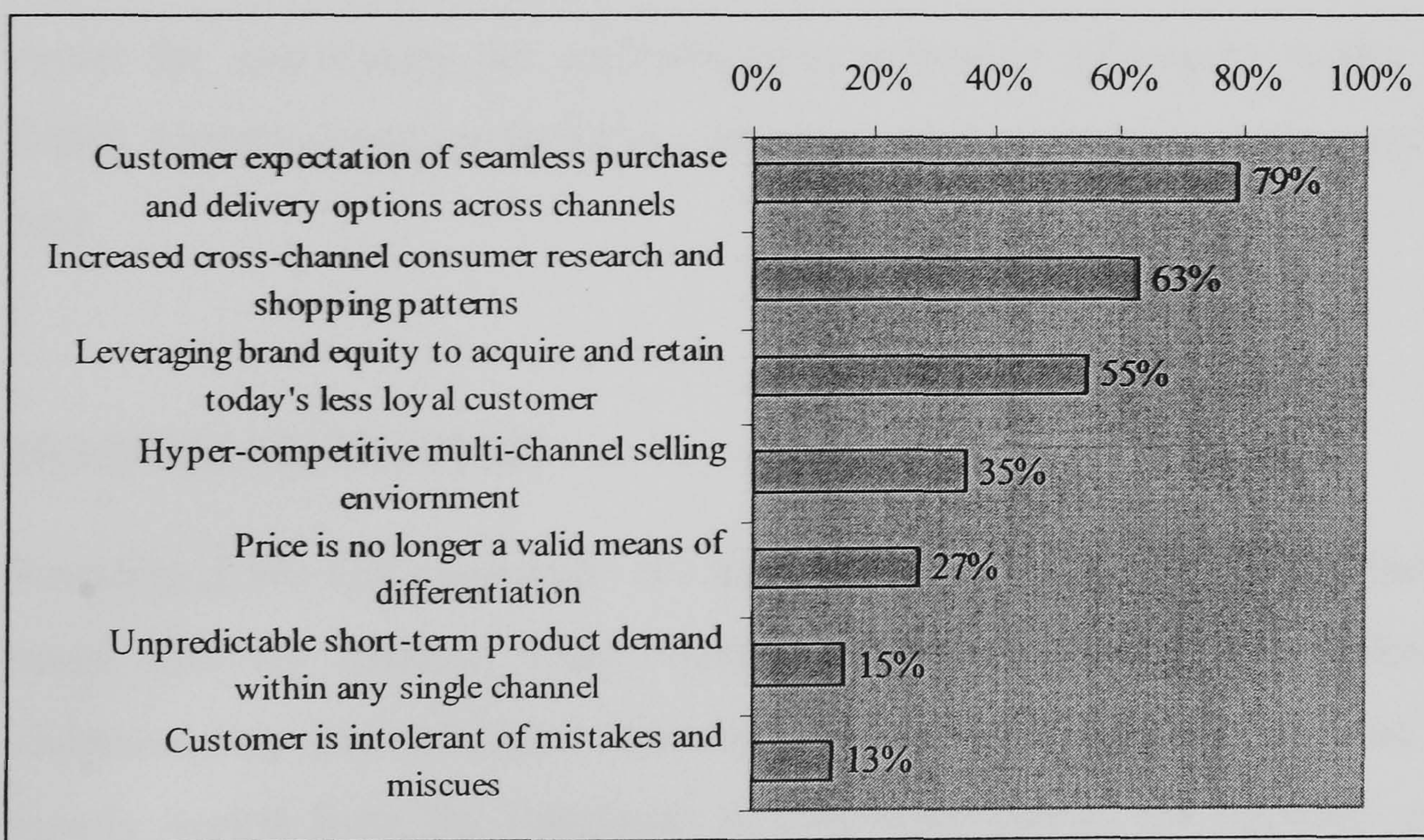


Figure 10.5: Multi-channel Pressures

(Source: Aberdeen Group 2005, p.3)

Consumers normally have very high expectations in the online environment which may result in a gap between the expectations and the actual service that is delivered (Zeithaml et al. 1988). For established retailers, meeting consumers’ expectations are

even more demanding as was noted by White and Daniel (2004, p.16), “providing customer support for an online service is very labour intensive since customer expectations are very high – especially when you have a well known brand name.” Multi-channel brand value is all about consistency, fulfilling consumers’ expectations for seamless purchase and delivery options across all channels. Thus how to differentiate and achieve internal understanding and collaboration is a challenge.

Secondly, Aberdeen Group (2005) suggested that in response to the above challenges, retailers should change the organizational structure and compensation incentives to be brand rather than channel specific. The offline and online operation needs to be seamlessly integrated as one distinct brand entity for consumers. Delivery service, as an extension of the brand, should be an important part of the integration.

Thirdly, multi-channel retailers should develop information and communication technologies which have a huge impact on various functions of retailing. Deploying multi-channel data management strategies helps retailers to have a uniform view of the customer. For example, integrating online sales data and store point of sales (POS) data opens the opportunity for understanding consumer behaviours better (Barlow et al. 2004). Good technology facilities consumers to buy products in the way that suits them best.

10.5 COLLABORATION

Retailers, LSPs and consumers are the three main stakeholders in online shopping and home delivery market. They need to communicate more and look for mutual understanding and solutions. Joyce (2005) argued that inefficiency of home delivery mainly rooted from the interfaces of concerned parties (as opposed to stakeholders’ internal activity) and thus the solution focus was to define responsibility and improve communication. “By ensuring that the necessities of up line and down line stakeholders are defined, monitored and effectively operated at the interfaces between them, inefficiencies are not transferred, and individual cost effectiveness is improved” (p.19, see Figure 10.6).

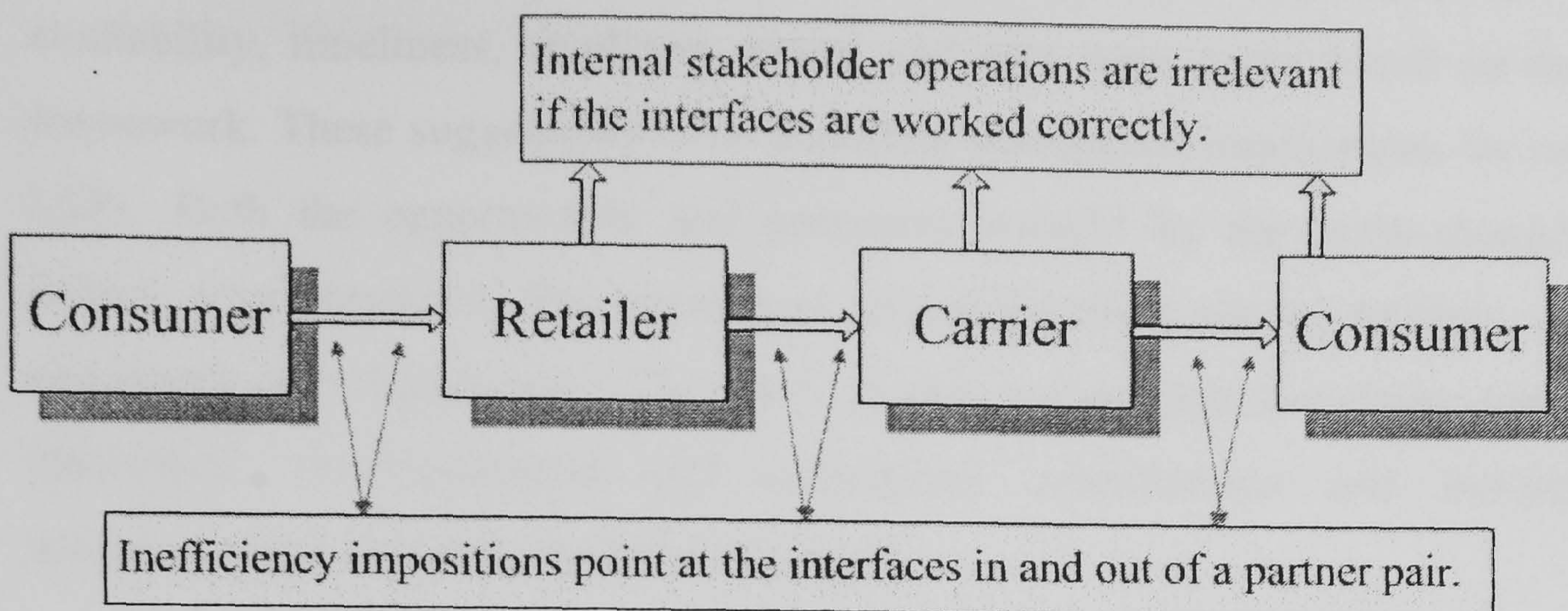


Figure 10.6: Inefficiency Solution-Interfaces between Retailers, Carriers and Consumers

(Source: Joyce 2005 p.19)

LSPs and carriers did not see any difference in collaborating with different kinds of retailers. Home delivery service performance is related to the individual performance of carriers, retailers' experience in outsourcing, and retailers' relationships with LSPs.

Retailers need to have an exact understanding of what carriers offer from end to end. It is beneficial for retailers to make time and meet their carriers regularly so to identify problems, solve problems quickly and agree on important issues. Retailers should also meet their consumers and listen to their needs and check whether carriers do their jobs properly. Creating the right values for all the parties, maintaining longer relationship and committing to ideas together are very important.

It is also important for the industry to be monitored properly and consumer interests protected. IDIS is the first retailer accreditation scheme proposed by IMRG but it has to be properly and strictly enforced all the time to fulfill its original initiative. IMRG has also issued consumer's rights and duties when they shop online. The three parties need to work together to make the home delivery experience a better one.

10.6 CONCLUSION

This chapter combined the consumer survey and company interviews and answered the sixth research question. Both retailers and LSPs have constraints and cost issues to

worry about. Suggestions as to how to improve the home delivery service quality in availability, timeliness, condition, return and cost were given based on the e-PDSQ framework. These suggestions have important managerial implications for retailers and LSPs. Both the opportunities and pressures brought by the multi-channel retailing format were presented. The importance of collaboration among retailers, carriers and consumers was highlighted. The next chapter summarises the thesis and details its theoretical, methodological and managerial contributions and discusses study limitations and direction for future research.

CHAPTER ELEVEN: CONCLUSIONS AND IMPLICATIONS

11.1 THESIS SUMMARY

This thesis has developed an e-PDSQ framework in the B2C e-commerce and home delivery market; it has compared the e-PDSQ differences between multi-channel retailers and pure players and explored the perceptions of retailers, LSPs and consumers with relation to these differences. This chapter concludes the thesis by first providing a summary, and then discussing its contribution and implications for management and future research.

Logistics is often viewed as a support function for many businesses; however it provides time, place and form utilities which are crucial in customer service. Good customer service can serve as a differentiator to provide firms with a competitive advantage and helps to generate satisfaction, loyalty and sales. Service quality issues have been explored in numerous academic publications and are very important in the logistics and marketing literature.

Physical distribution is outbound logistics, dealing with the final distribution of finished products. Physical distribution service quality (PDSQ) involves activities such as transportation, warehouse location, inventory management, and materials handling. A few studies (Mentzer et al. 1989, 1999, 2001, Emerson and Grimm 1996, Bienstock et al. 1997) conceptualised PDSQ constructs in the traditional B2B context and important dimensions include availability, timeliness, quality and communication. This body of literature provides a basis for developing a PDSQ framework in the context of online retailing and e-fulfilment.

Service quality issues are pivotal to an e-retailer's success. A review of twenty-four e-SQ references identified themes including website design, information availability and content, security and privacy, consumer service and order fulfilment. Although recognized broadly as a critical element and a tough challenge in B2C e-commerce, order fulfilment is under-researched compared with other e-SQ elements. Good

fulfilment practices complete successful business transactions and thus deserve more research attention.

E-commerce and home delivery have effectively extended the supply chain to consumers' homes. Large, bulky and regular flows to shops are partly replaced by smaller, more frequent and multi-drops deliveries to households. Most e-retailers use LSPs for the home delivery operation and thus LSPs play an important role in shaping consumers' perceptions of e-PDSQ.

Of the limited references to e-fulfilment in the literature, even fewer make distinctions between multi-channel retailers and pure Internet players in the online shopping market. Pure players, as a relatively new phenomenon starting a decade ago, challenge the dominant high street shopping pattern. This research has compared their home delivery performance with that of multi-channel retailers, thus addressing this significant gap in the literature. Other research questions include:

- RQ1: What are the e-PDSQ dimensions against which consumers rate e-retailers and how important are these dimensions?
- RQ3: What are the actual home delivery performances achieved by retailers and LSPs against the e-PDSQ framework?
- RQ4: What are the factors responsible for any e-PDSQ differences?
- RQ5: How much do logistics service providers (LSPs) contribute to these differences?
- RQ6: What are the problems and constraints in the home delivery market?
- RQ7: How can companies address the observed problems and constraints?

To measure the e-PDSQ differences, an e-PDSQ framework based on the PDSQ literature was developed from the literature consisting of four dimensions and twelve variables. A two-stage methodology from Churchill (1979) was used in this thesis as a rigorous approach for developing measurement dimensions and variables. A critical realism paradigm and a combination of quantitative and qualitative approaches were adopted to explore the e-PDSQ issues from both demand and supply perspectives.

A pilot consumer survey sampling 1000 households in Colinton and Currie areas of Edinburgh represented the first stage of Churchill's framework. The survey found that the five most important e-PDSQ variables were confirmation of availability, order accuracy, order condition, choice of delivery date and delivery on the first date arranged. Pure players were perceived to be better than multi-channel retailers in overall e-PDSQ performance as well as in order checking, order accuracy and order condition. Exploratory factor analysis derived four factors utilising all 12 variables and was considered statistically robust. The four factors largely confirmed the four dimensions in the original framework. Three more variables were added to the e-PDSQ framework based on the results of the pilot survey.

The main consumer survey based on a sample of 2000 households in the rest of Edinburgh represented the second stage of Churchill's framework. The revised e-PDSQ framework was tested and the five most important variables were the same as in the pilot survey. Pure players again performed better than multi-channel retailers, especially in order tracing and order accuracy. The majority of consumers indicated that the home delivery service either met or exceeded their expectations. Timeliness and nature of the return operation were found to have more effects on consumers' overall e-PDSQ perception than the other two dimensions.

Consumers' online shopping preferences and habits, including unattended delivery issues, were examined. Factors which may possibly affect e-retailers' e-PDSQ were also explored. Hypotheses were developed to understand the effects of order value, delivery charge and product category on e-PDSQ. But no significant relationships were found between e-PDSQ and these three factors.

The supply side of the empirical study comprised interviews with sixteen companies from the retailing and logistics sectors. The interviews explored in detail the e-retailers' home delivery operations and their views on availability, timeliness, condition and return performance. Pure players' e-PDSQ performance over multi-channel retailers was considered to be temporary and the multi-channel retailing format was predicted to thrive in the longer term by most interviewees. The online channel is pure players' sole focus which may result in better service quality now. Traditional retailers normally have a broader product range which makes it difficult to achieve service consistency.

LSPs' play an important role in retailers' service offerings. LSPs can perform system design, warehousing, delivering and returning operations for retailers. LSPs' services, specialties and experience in the B2C home delivery market and their collaboration with retailers vary which contribute to the observed e-PDSQ differences. The current home delivery market is fragmented but consolidation within the sector is likely in the near future. Reasons which may cause various service failures were analysed and suggestions on how to improve the service quality were proposed.

11.2 KEY FINDINGS

RQ1: What are the e-PDSQ dimensions against which consumers rate e-retailers and how important are these dimensions?

The initial e-PDSQ framework was developed from the literature and then refined by the consumer surveys. The final framework consisting of four dimensions and fifteen variables are shown in Table 11.1. Thus, consumers expect e-retailers to provide a range of home delivery service features that include these variables. The framework incorporates the most important variables identified in the literature on traditional PDSQ as well as those relevant in an online environment.

Dimensions	Variables
Timeliness	Choice of delivery date; choice of delivery time window; Deliver on the first date arranged; Deliver within a specified time slot; quick delivery
Availability	Confirmation of availability; Substitution offer; Order tracking and tracing system; waiting time for out-of-stock items
Condition	Order accuracy; order completeness; order condition upon arrival
Return	Return channels options; promptness of collection; promptness of replacement

Table 11.1: The Final E-PDSQ Framework

The importance of these variables differed but they all carried some importance to consumers (see Table 11.2). Consumers attached more importance to basic service features such as order condition and accuracy, and less importance to those which may well be additional service features and not offered by many retailers such as choice of delivery time slot, order checking and alternative offer. Most retailers can guarantee

order accuracy while not many can offer order delivery time slot or on-time order tracking system. These are criteria against which retailers can differentiate themselves. The online shopping market is growing quickly and becoming more mature. Consumers will also be more aware of their rights. Thus it is worthwhile for retailers to invest in these ‘niche’ service features.

Variables	Total
Order Condition	4.94 (1)
Order Accuracy	4.86 (2)
Easy Return	4.64 (3)
Availability Confirmation	4.62 (3)
Deliver on the First Date Arranged	4.53 (5)
Prompt Replacement of Returns	4.53 (5)
Specify Delivery Date	4.45 (7)
Prompt Collection of Returns	4.37 (8)
Ability to Deliver Quickly	4.30 (9)
Deliver in Time Slot	4.30 (9)
Waiting Time for out-of Stock	4.27 (11)
Order completeness	4.19 (13)
Specify Delivery Time Slot	4.14 (12)
Order Checking	3.82 (14)
Alternative Offer	2.79 (15)

Table 11.2: The Importance of the Variables

RQ2: What are the differences in e-PDSQ between pure players and multi-channel retailers across these dimensions from the consumer's perspective?

Pure players were perceived to provide better overall e-PDSQ than multi-channel retailers in the consumer surveys. The majority of consumers considered the home delivery service meet their expectations. Pure players performed better in order tracing and tracking and order accuracy while multi-channel retailers did better in availability confirmation. The results confirmed Rabinovich and Bailey's study (2004) that multi-channel retailers exhibited better availability than their pure play competitors. Pure players are better equipped with the latest technology, which enable them to be more efficient. Timeliness has the strongest correlation with the overall e-PDSQ perceptions. On-time delivery and short order lead time led to high consumer satisfaction. Proper handling of returns also enhanced positive e-PDSQ perception.

RQ3: What are the actual home delivery performances achieved by retailers and LSPs against the e-PDSQ framework?

Most retailers have good availability rate except apparel retailers. Some multi-channel retailers separate the home delivery system from store replenishment system as the service requirements are different. Most retailers provide both premium and standard deliveries and charge differently although few retailers offer a delivery time window. Two-man products have higher timeliness and first time delivery rate than parcels. Damage rate is low for most products. Retailers have different policies for back orders. Multi-channel retailers offer more return channels than pure players. Some products have high return rates and are the focus of retailers' strategy. The results of the consumer surveys were consistent with those of the company interviews. Most issues in relation to consumers' dissatisfaction were acknowledged by retailers and LSPs.

RQ4: What are the factors responsible for any differences?

Relationships between e-PDSQ and three factors, i.e. order value, delivery charge, and product category were tested but no significant correlations were found. The company interviews revealed a few factors which may have caused the e-PDSQ differences between pure players and multi-channel retailers. The online channel is the pure player's sole focus and if it does not do it well, it would not exist. Multi-channel retailers have core retail systems and often treat the online channel secondary. Traditional retailers also have to overcome difficulties in culture, system integration, skill differences in managing various channels and technology upgrades when moving online. Pure players tend to be more efficient and leaner and invest more in technology such as online order tracking, which is an important enabler of effective order fulfilment. As single channel retailers, they have to demonstrate reliability by providing excellent home delivery service, the only face-to-face interaction they may have with consumers.

The second possible explanation of the difference in consumers' e-PDSQ rating of multi-channel retailers and pure players relates to their expectations. Consumers normally have high expectations on established retailers, whom they trust would provide as good service online as offline. The reality is traditional retailers may not necessarily provide excellent service online. The more consumers expect the more likely it is that they will feel let down by the actual service and thus have a very low perception of the retailer's performance. On the other hand, as most pure players are

new to consumers and consumers tend to have lower expectations, they may be quite happy with a reasonable service.

A possible third factor is product variety. Pure players generally have a much narrower product range than multi-channel retailers. Some successful pure players such as Amazon started from very deliverable products such as books, CDs and small electronic products. Some multi-channel retailers have to deal with delivery forms ranging from parcels to two-man's special delivery. A broad product range results in the use of multiple carriers, which makes it difficult to manage and remain consistent in service quality. Thirumalai and Sinha (2005) suggested a targeted product-based strategy for managing the online retailing fulfilment process. Their study found that consumers have higher expectations for specialty product deliveries thus retailers should allocate resources and achieve a high standard of service. On the other hand, deliveries of commodity-like products should be charged less and delivered in a way affordable for consumers.

The fourth reason related to the performance of LSPs and it will be discussed with reference to the fifth research question.

RQ5: How much do logistics service providers (LSPs) contribute to these differences?

All e-retailers use LSPs in one way or another and most last mile deliveries are fulfilled by carriers. Thus LSPs contribute to the e-PDSQ difference although the extent of this contribution is debatable. The most commonly outsourced activities in the B2C market are warehousing and last mile delivery. The difference in the degree of commitment and relationship, i.e. whether it is shared-use or dedicated service may create service variation (most last mile deliveries are shared service but warehousing can be dedicated service). Also some LSPs specialize in B2C e-commerce and can provide more value-added services such as system design or return streamlining. Retailers who use LSPs specializing in B2C e-commerce might be expected to have an advantage over those who do not.

Carriers can be roughly divided by express or standard carriers and they vary in service offering and pricing. Express carriers are able to provide speedy delivery with online tracking systems while standard delivery tends to be longer. It partly depends on how much consumers want to pay. But the service variations among express carriers or among standard carriers may not be so prominent. There is little evidence to suggest that there are significant differences in service quality among carriers with similar service offerings and pricing. Furthermore, even the differences between express and standard carriers are getting smaller as the development of online shopping and the increase in consumer awareness and demand make carriers improve their services.

RQ6: What are the problems and constraints in the home delivery market?

The biggest constraint is the trade off between costs and services. Both retailers and LSPs recognize consumers' need for good home delivery service but feel constrained by cost issues. Retailers need to have a better understanding of the cost of running home delivery and use more integrated systems. They also need to manage consumers' expectations and relationships with LSPs, who play an important part in the order fulfilment process. With more players coming into this market, LSPs need to differentiate themselves by providing specialized services. They also need enough volume and drop density to achieve economy of scale and make a profit.

RQ7: How can companies address the observed problems and constraints?

Recommendations were proposed to improve the home delivery service quality and some main points are highlighted here:

- Retailers, especially multi-channel retailers develop an online order tracking system or provide a link to the carriers' websites to create visibility in the home delivery channel and for consumers to track orders. Retailers involve carriers to communicate with consumers as much as possible.
- Retailers should promise a realistic service matching their capability.
- More delivery and unattended delivery options should be offered to consumers so they have more choices and the first time delivery failure rate can be reduced.

- An efficient returning process should be designed so that multiple channels are provided for consumers to return and replace goods.
- LSPs should have specialties in certain areas and be flexible in allocating resources to maximize profits.
- Consumer complaints should be resolved quickly which not only brings down the cost but also enhance customer satisfaction.
- Retailers should raise consumers' awareness of their own responsibilities so consumers can be more aware of what they can do to contribute to the successful completion of the transaction.

11.3 CONTRIBUTION OF THE RESEARCH

In line with stated research objectives and questions this thesis investigated the home delivery service quality in the UK online shopping market. In doing so this research has made several contributions to logistics theory building and previous research, research methodologies and logistics practice.

The most significant theoretical contribution of this research is the creation of the e-PDSQ framework, the empirical testing of it and the application of the framework to the home delivery market (Xing and Grant 2006). This is the first comprehensive home delivery key performance indicator framework developed in the e-retailing literature. The framework was distilled from the traditional PDSQ literature and new dimensions and variables were developed which differentiated it from any traditional PDSQ framework. Most previous studies focused on the general aspects of e-SQ without deep investigation of the order fulfilment process. Even Rabinovich and Bailey's work (2004), which focused on e-PDSQ, included only three dimensions (availability, timeliness and reliability) without any variables. This e-PDSQ framework effectively addressed this gap in the literature by providing four dimensions and fifteen variables, which capture the most important aspects of order fulfilment operations.

The second contribution of this research was to address the e-PDSQ differences between multi-channel retailers and pure players, another gap in the literature. Rabinovich and Bailey (2004) suggested that multi-channel retailers exhibited better

availability while late entrant pure players exhibited superior timeliness and reliability. This research compared the e-PDSQ differences within a much more comprehensive framework yielding more detailed results, not only for overall e-PDSQ but also for each of the fifteen variables.

The third contribution related to the factors for the e-PDSQ differences. Although the thesis did not find the effects of delivery charge, order value and order size on e-PDSQ, factors such as organizational focus, consumers' expectation gap, product variety and the contribution of LSPs were found to have huge implications on e-PDSQ.

Fourthly, the research examined LSPs' roles in the home delivery market, a topic scarcely mentioned in the literature. Although the empirical study was limited by a small sample, the sample did represent the major players in the home delivery market. In contrast to previous studies which mainly focused on consumers, this thesis examined issues from the suppliers (both retailers and LSPs) perspective as well as the consumers.

From a methodological perspective, this thesis provided a different approach to analyse e-PDSQ. As opposed to the mainstream positivist paradigm, a critical realistic paradigm was adopted to suit the study's exploratory and explanatory nature. This added rigour in item scales development and was flexible in exploring explicit or implicit factors behind the phenomenon. The consumer surveys confirmed the appropriateness of the two-stage framework for scale development proposed by Churchill (1979).

From a logistics practice perspective, this thesis described the current home delivery market in the UK, analysed its problems and proposed solutions. The managerial implications are discussed in the next section.

11.4 MANAGERIAL IMPLICATIONS OF THE RESEARCH

This study sampled 3000 households in one market and sixteen major service providers across the UK. The study has significant practical managerial implications for retailers and LSPs on how to improve their home delivery service. The results of the consumer

surveys and company interview studies were reported in the main e- logistics magazine (E-fulfilment Issue 40 2006) and circulated in the Home Delivery Forum organized by IMRG, the most prominent industry body in the online retailing and home delivery operations. The dissemination of the author's findings is helpful to improve companies' service offerings.

First of all, the findings specifically identify a range of variables that UK retailers and LSPs can use to develop their own customer service policies and adjust the priority given to these variables. The e-PDSQ framework is a useful set of key performance indicators against which retailers can measure and monitor their performance effectively. Most retailers have their own KPIs but they may not be as comprehensive and complete as the e-PDSQ framework, which has been tested by two consumer surveys.

Secondly, this research 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. They should take the Internet as a useful channel to broaden their service offerings and enrich the customer shopping experience. The Internet can be a unique opportunity for established multi-channel retailers to penetrate into 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 first mover advantage and often equipped with the latest technology, pure players can have a technical know-how advantage. But they must work very hard to maintain their edge in delivering a speedy and reliable service.

Thirdly, the thesis analysed the home delivery problems and constraints and proposed ways to solve these problems based on the e-PDSQ framework. These suggestions are detailed and cover the most important aspects of e-fulfilment. Some recommendations are prioritised to give retailers means of differentiating themselves at a strategic level. Companies can benchmark their performance against the consumer survey results to see what consumers actually want. By referring to the list of suggestions, retailers can

prioritise their activities and improve the service accordingly.

Lastly, this thesis provides insights from multiple perspectives. Consumers, retailers and LSPs which form the triangle of home delivery operations, are all covered. Any party can not only reflect its own experience or performance from the thesis results, but also have better understanding of other parties. That helps to develop understanding, foster trust and enhance effective collaboration.

11.5 THESIS LIMITATIONS

A researcher has control over only a certain domain and thus limitations exist. The consumer survey was undertaken in Edinburgh during 2004 and 2005. Edinburgh has a culture of Internet acceptance (Fernie and McKinnon 2003). There may be a difference of consumer expectations and perceptions among different cities and between urban and rural areas. Internet shopping is a fast-moving business and changes quickly. This research gave a snapshot of one place over a period of time and this has to be acknowledged when extrapolating these findings else where.

Due to time and resource constraints, the researcher interviewed sixteen companies only. Although these companies are major players and very active in the B2C and home delivery market, the small sample may result in a certain level of bias. A better link between consumers and suppliers can be established with a bigger sample.

This research did not differentiate among product sectors when discussing and comparing retailers' e-PDSQ. A better understanding of e-PDSQ may be gained if it is evaluated by product sectors.

The research did not find out whether pure players choose better and speedier LSPs than multi-channel retailers. Neither the interviews nor the subsequent website reviews revealed much information on this issue. Future research can investigate whether pure players' and multi-channel retailers' choices of LSPs are very different. Other directions for future research are discussed in the next section.

11.6 DIRECTIONS FOR FUTURE RESEARCH

This study focused on non-food products and did not consider grocery products. Grocery retailers such as Tesco have experienced impressive growth of sales online and they have expanded into non-food lines: Tesco launched an expanded home shopping service for non-food items in 2006 (Logistics Manager 2006). Future research can apply the e-PDSQ framework to the grocery sector in order to investigate the food home delivery service. Future research can discuss how food retailers operate or otherwise how they operate home deliveries of both food and non-food products.

This e-PDSQ framework involves fifteen variables which measure the performance using objective and hard data. Future research can consider expanding the framework to measure the logistics service quality which includes more 'soft' variables. For example, the manner and knowledge of delivery staff may affect consumers' perception.

This research involves consumers, retailers and LSPs and focuses on their perceptions and attitudes. These are the three parties immediately involved in the home delivery market. The inbound logistics, i.e. the sourcing of raw materials and products from suppliers to retailers was not considered. The opinions of the UK Government are not included. The Government may provide insights into the regulation of the market and the product sourcing process which may have implications on e-PDSQ. Future research can take its perspectives into consideration.

Future research can replicate this study in other cities or rural areas in the UK or even other countries to investigate whether there are differences in consumers' perceptions of home delivery service across different samples.

Future studies can also develop a few different sub-frameworks based on this e-PDSQ to serve various industry sectors. Or future research can focus on one sector such as apparel or furniture to investigate this particular sector's e-PDSQ.

This research showed that multi-channel retailers currently lag behind pure players in e-PDSQ but they were still perceived to be the future of retailing by most interviewees. Therefore future research can follow up the current work and investigate whether multi-

channel retailers can catch up and finally provide as good home delivery service as pure players or even surpass pure players.

The consumer surveys were conducted between 2003 and 2004. Nowadays online consumers have become more sophisticated and know what to expect when shopping online. Will consumers' brand experience affect the framework? Future research can investigate how consumers' brand experience affects their perception of e-PDSQ or the risks involved in brand image when a retailer does not perform well in the home delivery operations.

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. This study has made its theoretical contribution and also aroused interest in the home delivery industry and encouraged more discussion and reflection of companies' operations.

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Appendix One

November 23 2004

Mr. XXX.

Address

Dear Mr. XXX:

The Logistics Research Centre at Heriot-Watt University is undertaking research into Internet shopping and home delivery of non-food products. We want to find out what standard of service people expect from Internet retailing and whether they are satisfied with the service they have received. Even if you have not yet bought any products on the Internet, we would still like to get your views on the quality of service that Internet retailers should be providing. With the information collected in this survey, we will be able to recommend improvements to companies' home delivery service.

We would be very grateful if you could contribute to this research project by completing the enclosed questionnaire and returning it in the self-addressed, pre-paid envelope. The questionnaire should only take 10-15 minutes to complete. You are guaranteed complete confidentiality. The collection and analysis of the information will be anonymous.

Please return the completed questionnaire to us before 15 December 2004.

Should you have any queries about the research please do not hesitate to contact:

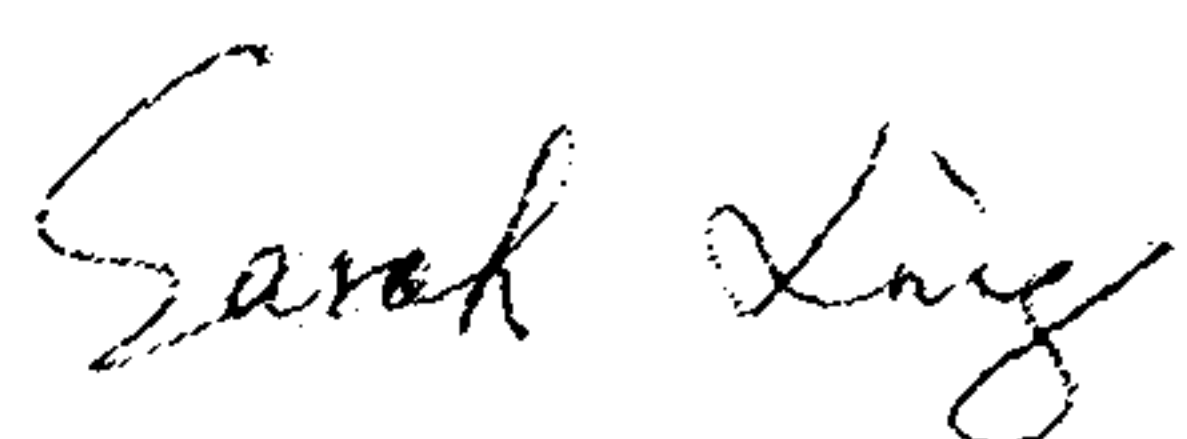
Sarah Xing
Logistics Research Centre
School of Management and Languages
Heriot-Watt University
Riccarton
Edinburgh EH14 4AS

Direct Telephone 0131 451 8206
E-mail yx1@hw.ac.uk
Website <http://www.sml.hw.ac.uk/logistics>

The survey results will be posted on the Logistics Research Centre website for consumers and companies to view.

Thank you in advance for your assistance in this research.

Yours sincerely,



Sarah Xing

Internet Shopping and Home Delivery Study

Section 1: Importance of the Home Delivery Service

1. Have you ever purchased a product on the INTERNET? Yes No
 If 'Yes', please go to question 2. If 'No', please go to question 3.

2. What are the two most important reasons for you to shop on the INTERNET?
 Most Important Reason:
 2nd Most Important Reason:

3. Please indicate in the following table how much importance you would attach to different aspects of the service provided by companies selling products on the INTERNET. Please circle the number that most closely reflects your feelings or expectations.

<i>At the time of placing an order</i>	Unimportant Very Important					Rank
	1	2	3	4	5	
Ability to confirm whether or not a product is in stock before you place an order	1	2	3	4	5	
Ability to offer an alternative product when the one you want to buy is out-of-stock	1	2	3	4	5	
Ability to specify the delivery date	1	2	3	4	5	
Allowing you to check the progress of your order	1	2	3	4	5	
<i>At the time when an order is delivered</i>						
Ability to deliver on the first date as arranged	1	2	3	4	5	
Ability to deliver within an specified time slot	1	2	3	4	5	
Ability to deliver the actual product as ordered	1	2	3	4	5	
Ability to deliver the product undamaged	1	2	3	4	5	
Ability to deliver a complete order at the same time when it consists of several products	1	2	3	4	5	
<i>At the time of returning a product or order (if it is faulty, damaged or you do not want it)</i>						
Easy and convenient ways to return the product	1	2	3	4	5	
Prompt collection of the returned product	1	2	3	4	5	
Prompt replacement of the returned product	1	2	3	4	5	

In the shaded column on the right in the above table, please rank in order the FIVE home delivery service features that are most important to you.

4. Are there any other aspects of Internet home delivery service that you consider important? If so, please specify.

The next section is about **NON-FOOD INTERNET** shopping. If you have not yet bought any **NON-FOOD** products on the **INTERNET**, please go to Section 3 on Page 4. Thank you.

Section 2: Performance of Home Delivery Service

5. When was the last time that you bought a **NON-FOOD PRODUCT** on the **INTERNET**?
 Last week Last month Past 6 months Past 1 year Past 2 years Can't remember

6. What was this product that you bought? Please list the type of product and retailer.

Product Type:

Retailer Name:

7. Did the order arrive on time as promised by the retailer? Yes No

8. How long did it take for the order to arrive?

Next Day 2 days 3 to 4 days 5 to 7 days more than 7 days

9. Was the delivery made within an agreed time slot? Yes No

If so, what was this slot?

Am/Pm 2 hour slot 1 hour slot

10. How much did you pay for the delivery?

nothing £1 - £2 £3 - £6 £7 - £10 more than £10

11. Do you consider this delivery charge value for money? Yes No

12. Did you have to return the product? Yes No

13. Please indicate in the following table your feelings about the standard of service you received for this purchase (i.e. the one specified in question 6). Please circle the number that most closely reflects your opinion. Please **LEAVE BLANK** for any service features that you did not receive.

<i>At the time of placing the order</i>	Very Poor Service					Excellent Service
	1	2	3	4	5	
Confirmation of whether or not the product was in-stock before you placed the order	1	2	3	4	5	
Offer of an alternative product if the one you wanted to buy was out-of-stock	1	2	3	4	5	
Specification of the delivery date after you placed the order	1	2	3	4	5	
Provision of information about the progress of the order	1	2	3	4	5	

<i>At the time the order was delivered</i>	Very Poor Service					Excellent Service				
	1	2	3	4	5	1	2	3	4	5
Delivery on the first date as arranged	1	2	3	4	5	1	2	3	4	5
Delivery within a specified time slot	1	2	3	4	5	1	2	3	4	5
Delivery of the actual product you ordered	1	2	3	4	5	1	2	3	4	5
Condition of the order on arrival	1	2	3	4	5	1	2	3	4	5
Delivery of the complete order at the same time when it consisted of several products	1	2	3	4	5	1	2	3	4	5
<i>At the time of product or order return</i>										
Offer of easy and convenient ways to return the product	1	2	3	4	5	1	2	3	4	5
Prompt collection of the returned product	1	2	3	4	5	1	2	3	4	5
Prompt replacement of the returned product	1	2	3	4	5	1	2	3	4	5

14. How would you rate the **OVERALL** standard of service you received for this purchase?

Very Poor Service			Excellent Service		
1	2	3	4	5	

15. Is there normally someone at home during the day to receive a delivery?
 Yes No

16. If not, do you or someone else have to take time off work to receive the delivery?
 Yes No

17. What are your preferred delivery times?
 Before 8 am 8 am – 12 noon 12 noon – 6 pm
 6 pm – 8pm 8 pm – 10 pm by arrangement

18. Would you prefer WEEKEND delivery? Yes No

19. A weekend or evening delivery normally involves a surcharge. How much would you be prepared to pay for it?
WEEKEND nothing £1 - £2 £3 - £6 £7 - £10 more than £10
EVENING nothing £1 - £2 £3 - £6 £7 - £10 more than £10

20. If there is no-one at home to receive the delivery, what would be your preference? (Tick one box)

- Leave the goods with a neighbour
- Deliver to a local pick-up point such as a post office, convenience store, petrol station etc.
- Deliver to your work place
- Arrange another delivery
- Others, please specify

21. In addition to this most recent purchase above, have you purchased any NON-FOOD products from other INTERNET retailers? Yes No (If no, please turn over and go to Section 3.)

22. If so, please indicate how frequently you purchased the following types of product on the INTERNET over the past SIX MONTHS.

Product Category	Never Times	Once	2 – 5 Times	More Than 5
Computer products	0	1	2	3
Photographic products	0	1	2	3
Furniture	0	1	2	3
Electrical appliances	0	1	2	3
Clothing	0	1	2	3
Sports products	0	1	2	3
Toys	0	1	2	3
Books & CDs	0	1	2	3
Groceries	0	1	2	3
Others (please specify)	0	1	2	3

23. Please list up to five INTERNET retailers that you have used, the type of product purchased and your OVERALL rating of their standard of service.

Retailer Name	Product Type	Very Poor Service					Excellent Service				
		1	2	3	4	5	1	2	3	4	5
		1	2	3	4	5					
		1	2	3	4	5					
		1	2	3	4	5					
		1	2	3	4	5					
		1	2	3	4	5					

Section 3: Related Information for Classification Only

24. Please indicate your gender: Male Female

25. Please indicate your age category: 16 - 24 25 - 39 40 -54 55 – 65 over 65

26. Please indicate your occupation:

27. Please indicate your highest level of education:
 Secondary School HNC, HND or equivalent Degree Postgraduate Degree Other

28. Including yourself, how many people live in your household?
 1 2 3 4 5 More than 5

29. What is your annual household income?
 Under £10,000 £10,000 to £29,999 £30,000 to £49,999 Over £50,000

30. How often have you bought from a CATALOGUE in the last six months?
 Never Once 2-5 Times More than 5 Times

Thank you very much for taking the time to complete this survey. Please return it using the prepaid envelope provided by the 30th November 2004.

Appendix Three

May 25 2005

Ms. XXX

Address

Dear Ms. XXX,

The Logistics Research Centre at Heriot-Watt University is undertaking research into Internet shopping and home delivery of non-food products. We want to find out what standard of service people expect from Internet retailing and whether they are satisfied with the service they have received. Even if you have not yet bought any products on the Internet, we would still like to get your views on the quality of service that Internet retailers should be providing. With the information collected in this survey, we will be able to recommend improvements to companies' home delivery service.

We would be very grateful if you could contribute to this research project by completing the enclosed questionnaire and returning it in the self-addressed, pre-paid envelope. The questionnaire should only take 10-15 minutes to complete. You are guaranteed complete confidentiality. The collection and analysis of the information will be anonymous.

Please return the completed questionnaire to us before 12 June 2005.

Should you have any queries about the research please do not hesitate to contact:

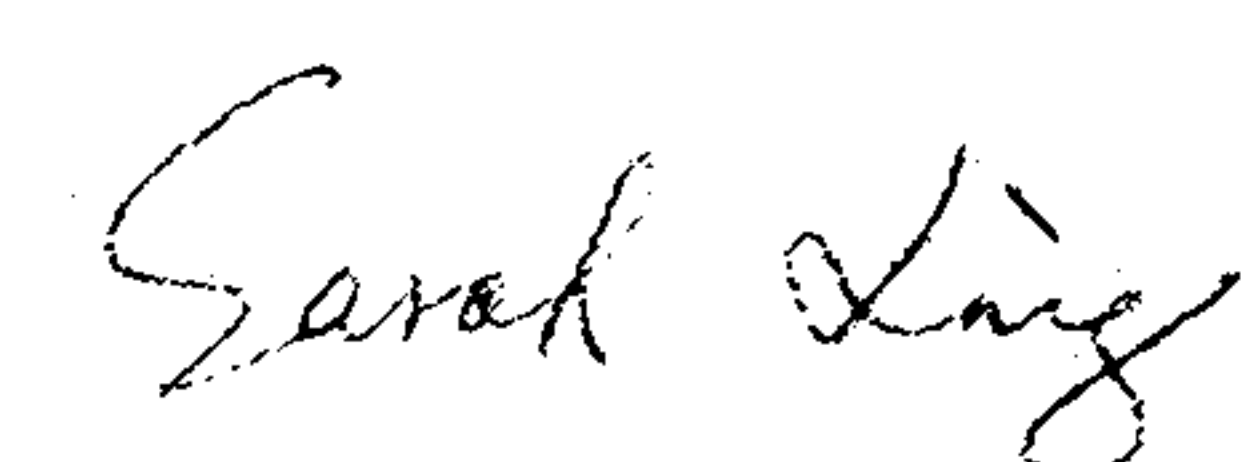
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The survey results will be posted on the Logistics Research Centre website for consumers and companies to view.

Thank you in advance for your assistance in this research.

Yours sincerely,



Sarah Xing

Internet Shopping and Home Delivery Study

Section 1: Importance of the Home Delivery Service

1. Have you ever purchased a product on the INTERNET? Yes No

2. Please indicate in the following table how much importance you would attach to different aspects of the service provided by companies selling products on the INTERNET. Please circle the number that most closely reflects your feelings or expectations.

<i>At the time of placing an order</i>	Unimportant 2 3 4 5 Very Important					Rank	
Ability to confirm whether or not a product is in stock before you place an order	1	2	3	4	5		
Ability to offer an alternative product when the one you want to buy is out-of-stock	1	2	3	4	5		
Ability to inform you how long you have to wait until the product is in stock in case it is out-of-stock	1	2	3	4	5		
Ability to specify a delivery date	1	2	3	4	5		
Ability to specify a delivery time slot	1	2	3	4	5		
Ability to deliver quickly	1	2	3	4	5		
Allowing you to check the progress of your order	1	2	3	4	5		
<i>At the time when an order is delivered</i>							
Ability to deliver on the first date as arranged	1	2	3	4	5		
Ability to deliver within an specified time slot	1	2	3	4	5		
Ability to deliver the actual product as ordered	1	2	3	4	5		
Ability to deliver the product undamaged	1	2	3	4	5		
Ability to deliver a complete order at the same time when it consists of several products	1	2	3	4	5		
<i>At the time of returning a product or order (if it is faulty, damaged or you do not want it)</i>							
Easy and convenient ways to return the product	1	2	3	4	5		
Prompt collection of the returned product	1	2	3	4	5		
Prompt replacement of the returned product	1	2	3	4	5		

In the shaded column on the right in the above table, please rank in order the FIVE service features that are most important to you.

The next section is about **NON-FOOD INTERNET** shopping. If you have not yet bought any **NON-FOOD** products on the **INTERNET**, please go to Section 3 on Page 4. Thank you.

Section 2: Performance of Home Delivery Service

3. When was the last time that you bought a **NON-FOOD PRODUCT** on the **INTERNET**?
 Last week Last month Past 6 months Past 1 year Past 2 years
 Can't remember

4. What was this product that you bought? Please list the type of product and retailer.
 Product type:
 Retailer

5. Please specify the reasons that you chose this particular product:

6. Did the order arrive on time as promised by the retailer? Yes No

7. How long did it take for the order to arrive?
 Next Day 2 days 3 to 4 days 5 to 7 days more than 7 days

8. Was the delivery made within an agreed time slot? Yes No
 If so, what was this slot? Am/Pm 2 hour slot 1 hour slot

9. How much was the order?
 Under £20 £20 - £50 £51 - £100 £100 - £200 Over £200

10. How much did you pay for the delivery?
 nothing £1 - £2 £3 - £6 £7 - £10 more than £10

11. Did this order have just one item or multiple items? one item multiple item

12. Did you have to return the product? Yes No

13. Please indicate in the following table your feelings about the standard of service you received for this purchase (i.e. the one specified in question 6). Please circle the number that most closely reflects your opinion. Please **LEAVE BLANK** for any service features that you did not receive.

<i>At the time of placing the order</i>	Very Poor Service			Excellent Service	
	1	2	3	4	5
Confirmation of whether or not the product was in-stock before you placed the order	1	2	3	4	5
Offer of an alternative product if the one you wanted to buy was out-of-stock	1	2	3	4	5
Information of how long you had to wait until the product was in stock in case it was out-of-stock	1	2	3	4	5
Specification of the delivery date	1	2	3	4	5
Specification of the delivery time slot	1	2	3	4	5
Provision of information about the progress of the order	1	2	3	4	5

<i>At the time the order was delivered</i>	Very Poor Service					Excellent Service
Delivery on the first date as arranged	1	2	3	4	5	
Delivery within the promised specified time slot	1	2	3	4	5	
Quick delivery	1	2	3	4	5	
Delivery of the actual product you ordered	1	2	3	4	5	
Condition of the order on arrival	1	2	3	4	5	
Delivery of the complete order at the same time when it consisted of several products	1	2	3	4	5	
<i>At the time of product or order return</i>						
Offer of easy and convenient ways to return the product	1	2	3	4	5	
Prompt collection of the returned product	1	2	3	4	5	
Prompt replacement of the returned product	1	2	3	4	5	

14. How would you rate the **OVERALL** standard of service you received for this purchase?

Very Poor Service				Excellent Service	
1	2	3	4	5	

15. Did this home delivery service meet your expectations?

- far below expectation
 below expectation
 within expectation
 exceed expectation
 far exceed expectation

16. Is there normally someone at home during the day to receive a delivery? Yes No

17. What are your preferred delivery times?

- Before 8 am
 8 am – 12 noon
 12 noon – 6 pm
 6 pm – 8pm
 8 pm – 10 pm
 by arrangement
 on the weekend

18. A weekend or evening delivery normally involves a surcharge. How much would you pay for it?

- WEEKEND nothing
 £1 - £2
 £3 - £6
 £7 - £10
 more than £10
EVENING nothing
 £1 - £2
 £3 - £6
 £7 - £10
 more than £10

19. If there is no-one at home to receive the delivery, what would be your preference? (Tick one box)

- Leave the goods with a neighbour
 Deliver to a local pick-up point such as a post office, convenience store, petrol station etc.
 Deliver to your work place
 Arrange another delivery
 Others, please specify

20. In addition to this most recent purchase above, have you purchased any NON-FOOD products from other INTERNET retailers? Yes No (If no, please turn over and go to Section 3.)

21. If so, please indicate how frequently you purchased the following types of product on the INTERNET over the past SIX MONTHS.

Product Category	Never	Once	2 – 5 Times	More Than 5 Times
Computer products	0	1	2	3
Photographic products	0	1	2	3
Electrical appliances	0	1	2	3
Books & CDs	0	1	2	3
Clothing	0	1	2	3
Sports products	0	1	2	3
Toys	0	1	2	3
Furniture	0	1	2	3
Housewares & Garden	0	1	2	3
Health & Beauty	0	1	2	3
Flowers, Gift or Art	0	1	2	3

22. Please list up to five INTERNET retailers that you have used, the type of product purchased and your **OVERALL** rating of their standard of service.

Retailer Name	Product Type	Very Poor Service					Excellent Service				
		1	2	3	4	5	1	2	3	4	5

Section 3: Related Information for Classification Only

23. Please indicate your gender: Male Female

24. Please indicate your age category:
 16 - 24 25 - 39 40 - 54 55 - 65 over 65

25. Please indicate your occupation:

26. Please indicate your highest level of education:
 Secondary School HNC, HND or equivalent Degree Postgraduate Degree Other

27. Including yourself, how many people live in your household?
 1 2 3 4 5 More than 5

28. What is your annual household income?
 Under £10,000 £10,000 to £29,999 £30,000 to £49,999 Over £50,000

29. Have you been a regular user of a CATALOGUE mail order service? Yes No

Thank you very much for taking the time to complete this survey. Please return it using the prepaid envelope provided by the 12th June 2005.

Appendix Five

Theme 1 XXX Company's multi-channel proposition and online channel

1. Your company adopts a strong multi-channel proposition. Why did XXX Company decide to sell online initially?
 - ? Develop multi-channel strategy
 - ? As an alternative to support business
 - ? Cost reduction
 - ? Following market
 - ? Broadening market coverage
 - ? Other:
2. Did you start your online selling channel by the purchase of xxx.com to acquire the technology or you started from inside? Did you just buy xxx.com for website and trading platform or for logistics expertise as well?
 - ? buy out website or trading platform
 - ? buy out logistics expertise
 - ? develop from inside
3. We learn from a report that 24% or nearly a quarter of your orders are put online but they only account for 4% of the revenue. So the product range online must be very different from that in store. What kind of products do you put online? How many SKUs do you put online as opposed to stores? What is the degree of overlapping?
 - ? 0 – 25%
 - ? 26% – 50%
 - ? 51% – 75%
 - ? 76% – 100%
4. What is the proportion of consumers ordering online and having goods delivered to their houses as opposed to ordering online and picking goods up from a local shop?
5. Does online channel cater for new consumers or old consumers too? What is the difference in the social and economical composition between online and traditional consumers?
 - ? cater for new consumers mainly
 - ? attract lots of old consumers

Theme 2 The nature of your operation and structure of the system

6. What is the degree of integration of inventory, warehousing, transport and IT between traditional channels (catalogue and store) and online channel? Do you use combined system or separated system?
 - ? completely separated
 - ? low degree of integration
 - ? medium degree of integration
 - ? high degree of integration
 - ? completely combined
7. Do you have separate warehouses for online order home delivery?
 - ? yes ? no

If yes, where are they?

If no, is there a separate section for online orders as opposed to store orders?

? yes ? no

- 8 For the home delivery purpose, do you deliver orders from the Internet independently from other channels or you consolidate them together? What is the degree of integration of Internet and store based delivery?
? deliver online orders independently
? consolidate online and store home deliveries
- 9 To what extent do you pool inventories across channels? When you are short of stocks, who get priority, consumers from traditional channels or online channel?
? consumers from traditional channels
? consumers from online channel
? depend on the time of ordering
- 10 XXX Company differentiates delivery of small products from large products. You can deliver small products within 48 hours and on average 14 days for larger products. Is that because you stock small products in the warehouse but not large products?
- 11 Do some of your suppliers deliver directly to the consumers? Where do suppliers' orders penetrate into the system?
? yes, they do.
? no, they only deliver to our warehouses or stores.
- 12 What are your return systems? Consumers can either return goods to a local shop or have them collected by you.
- 13 To what extent do you use 3PLs or in-house operation in warehousing and inventory management?
- 14 To what extent do you use 3PLs or own fleet operation in home delivery?

Theme 3 Your logistics company partners (emphasis on the INTERNET based home delivery)

- 15 We know that you have many logistics company partners, such as AA, BB,CC etc. How do you differentiate using these logistics companies?
? by ordering methods (store/ Internet/ telephone/ TV)
? by product categories (furniture/ leisure/ brown goods/white goods)
? by geographical areas
? by logistical functions (warehousing/ transport/ packaging/ final home delivery/ returns)
- 16 How many 3PLs are dedicated to you and how many provide shared-use service?
- 17 What logistics companies do you use for the Internet based home delivery? Do they do online home delivery exclusively or do they deliver orders placed from other channels?

- 18 Why do you choose your Internet home delivery partners? What are the unique selling points (USPs) do you think they have?
- ? Their special expertise;
 - ? Their national transport coverage;
 - ? Cost
 - ? Their reputation in the industry as a reliable partner
 - ? IT systems and capabilities
 - ? Other:
- 19 To which extent do your IT systems integrate with your 3PLs' systems?
- ? very closely integrated and smooth communication
 - ? medium level of integration
 - ? low levels of integration
 - ? extent varies among 3PLs
- 20 Do you use standard trading platform or software with all your 3PLs or it depends on your 3PLs' own systems?
- ? standard trading platform
 - ? it depends on the 3PLs' own systems

Theme 4 the Internet based home delivery performance: availability, condition, timeliness and return

- 21 What is the out-of-stock rate of online channel as opposed to traditional channel?
- 22 When do consumers find out the availability of goods?
- ? before order placement
 - ? after order placement
 - ? during the promised delivery period
- 23 Do you provide order tracking and tracing system online?
- ? yes
 - ? no
 - ? no, but they can call customer service to trace their orders
- 24 To what extent do you provide it jointly with carriers?
- ? we do it alone
 - ? we lead consumers to our carriers' website to trace their orders
- 25 To what extent do consumers know who their carriers are and interface with them?
- ? they do not know about the carriers
 - ? we hold information unless consumers ask us
 - ? they know about the carriers
- 26 What proportion of deliveries are made in time (deliver on the date or time window arranged)? (The timeliness rate is 97% for home delivery of all channels.)
- 27 What proportion of orders are delivered for the first time?
- ? lower than 25%

- ? 26% -- 50%
 - ? 51% -- 75%
 - ? 76% -- 100%
- 28 What do you do if the first delivery fails?
- ? the parcel goes back to the carrier's hub
 - ? the parcel goes back to XXX Company's warehouse
- 29 Do your 3PL charge you for the second or third delivery?
- ? yes
 - ? no
- 30 Do you deliver to the following places apart from consumers' home addresses and local stores?
- ? people's working address
 - ? neighbors
 - ? unattended delivery policy: door step, garage and garden
- 31 In the next three years, do you see any growth in the use of reception box?
- ? sharp growth
 - ? low to moderate growth
 - ? no growth
- 32 What is the order damage rate?
- ? lower than 25%
 - ? 26% -- 50%
 - ? 51% -- 75%
 - ? 76% -- 100%
- 33 What proportion of orders are delivered in full the first time?
- ? lower than 25%
 - ? 26% -- 50%
 - ? 51% -- 75%
 - ? 76% -- 100%
 - ? orders are delivered only when all the items are available & no back orders
- 34 Do your 3PLs send the returns to your warehouse or your suppliers' warehouse?
- ? retailer's warehouse
 - ? supplier's warehouse
 - ? 3PL's hub
- 35 What proportion of people return goods to a local store as opposed to have them collected by your 3PL?
- 36 As to complaints related to the last mile delivery, how do you or your 3PLs handle them?
- ? retailer
 - ? 3PL
- 37 What are your key determinants of cost to serve?

- 38 For small products, you provide named day delivery (£4.95), next day delivery (£7.90) and Saturday delivery (£7.90). What proportion of orders fall into different delivery options?
- 39 Can you give us some indication of the relative costs of providing the above different delivery options?
- 40 What are the biggest constraints or problems you experience with e-fulfilment?
- ? Currently available e-fulfilment packages lack integration with existing software suites;
 - ? There are too numerous communication standards (EDI, ebXML, UDDI, ...);
 - ? Privacy and security concerns from integrating and exposing systems to outside partners;
 - ? Cost of integration is high;
 - ? Restructuring warehouse and transport systems because of move to e-fulfilment;
 - ? Other:
41. Please comment on the current state of the home delivery market:
- To what extent do carriers differ in efficiency and service quality?
 - Is the present market structure sustainable? Or is it likely to consolidate?
 - To what extent do carriers specialize by product group, customer and geographical area?
 - The degree of single vs multiple sourcing of transport in home delivery. What are the benefits of spreading traffic between several carriers?

Appendix Six

Theme 1: Your B2C clients and your integration with your clients' systems

1. We understand that YYY Company provides various services to a broad range of clients and you are engaged in both business-to-business and business-to-consumer sectors. What percentage of your revenue is generated by business-to-consumer home delivery sector?
2. YYY is an e-fulfilment company. Which of the following activity (activities) account for your biggest business volume?
 - ? website system design and implementation
 - ? warehousing: picking, handling and dispatching
 - ? distribution (the last mile home delivery work to households)
 - ? return
 - ? call centre
3. In the B2C home delivery market, you have two kinds of retailer clients. A client like River Island sells products through multiple channels so they are called multi-channel retailers. A client like Dabs.com does not have a high street store, so it is called pure Internet player. Do you find any difference in the integration with multi-channel retailers and pure Internet retailers?
 - ? yes, and the differences are
 - ? no, no differences at all. We only do what our clients ask us to.
4. Which of these three types of retailers (multi-channel, catalogue+Internet and Internet only) do you think is the most efficient in organizational structure and be the most successful retail model in the future? Do you think they differ in service quality?
5. Much of YYY Company services are provided by the core infrastructure of your parent company's home shopping business. Internet shoppers may have higher income and less time compared with traditional catalogue shoppers, which requires a more timely delivery service. Did YYY Company have to experience huge changes when it started to fulfil the online channel?
6. My PhD project focuses on a comparative study of home delivery service quality between non-food multi-channel retailers and pure Internet players. I aim to find out whether one kind of retailer is better than the other in providing home delivery service. And the survey result suggests that in general, pure players were perceived to provide better service quality than multi-channel retailers. Is this finding in line with your experience? If so, why should this be?
7. How do you integrate with your clients' IT system? Do all clients get the same standards?
 - ? we provide them with the same standard package
 - ? we try to comply with our clients' systems
 - ? the extent of integration varies depending on the trading volume or other factors

? it depends on what service we provide to them (warehousing / distribution / order management / return etc.)

8. What is the degree of visibility your clients get out of your system? Or does the degree of efficiency in communicating with your clients vary from one client to another, depending on clients' own system?

? our clients can access to the real-time information from our website

? the degree of communication varies

Theme 2: B2C home delivery operations and return

9. As far as warehousing and picking services are concerned, to which extent do you provide dedicated and shared-use service in the warehouse?

10. How does the picking and handling system work in the warehouse?

11. For which retailers do you do the last mile home delivery to consumers? Do you subcontract it to other logistics companies or parcel carriers?

12. To which extent do you compete and collaborate with other logistics companies?

13. Do you / or your partners provide evening, weekend or named delivery apart from standard Monday to Friday delivery? Can you give me a rough indication of the proportions of demand of the above services from your customers?

? the most popular option is, followed by.....

? the least popular option is

14. What proportion of deliveries are made in time (deliver on the date or time window arranged) on average?

? lower than 50%

? 51% -- 75%

? 76% -- 100%

15. What is the success rate for the first time deliveries on average (there is somebody waiting at home or the delivery is left with a neighbor or outside the house)?

? Lower than 50%

? 51% -- 75%

? 76% -- 100%

16. How many drops do you / your partners make per vehicle trip on average?

17. What are the key performance indicators do your retailer customers use to measure your service quality? And what are the KPI you use to measure logistics companies who work for you?

18. How do you deal with returns? What is the system for return? How promptly do you collect and replace returned products?

19. Which product category has the highest return rate? What is the return rate of the deliveries you handle in general?

Theme 3: B2C home delivery cost and other issues

20. In the next three years, do you see any growth in the use of reception box?
- ? sharp growth
 - ? low to moderate growth
 - ? no growth
21. Regarding to the last mile delivery, you may have some complaints from consumers. What are the most common complaints? How do you or the retailer deal with the complaints?
22. What factors will you take into account when you decide how much to charge your retailer clients?
23. To what extent do clients respond to differential charging for home delivery services?
24. What are your key determinants of cost to service in home delivery operations? What makes it harder to serve one client than another?
25. What are the unique selling points (USP) your company has to bring to your clients?
- ? your special expertise;
 - ? your national transport coverage;
 - ? cost
 - ? your reputation in the industry as a reliable partner
 - ? your involvement with retailers at a strategic level
 - ? Other
26. What are the biggest constraints or problems you experience with e-fulfilment?
- ? Currently available e-fulfilment packages lack integration with existing software suites;
 - ? Retailers do not understand the real cost of e-fulfilment
 - ? Privacy and security concerns from integrating and exposing systems to outside partners;
 - ? Cost of integration is high for multi-channel retailers
 - ? Restructuring warehouse and transport systems due to moving to e-fulfilment;
 - ? Other:
27. Please comment on the current state of the home delivery market:
- To what extent do carriers differ in efficiency and service quality?
 - Is the present market structure sustainable? Or is it likely to consolidate?
 - To what extent do carriers specialize by product group, customer and geographical area?
 - The degree of single vs multiple sourcing of transport in home delivery. What are the benefits of spreading traffic between several carriers?

28. Do you think some retailers focus too much on the front end such as web design, special offers and marketing etc. and they should invest more in the back end to improve home delivery service?

Appendix Seven

Interview Questions

1. In e-retailing market, there are mainly three types of retailers: multi-channel, catalogue+Internet and Internet only. Which of these three types of retailers do you think is the most efficient in organizational structure and be the most successful retail model in the future? Do you think they differ in service quality?
2. My PhD project focuses on a comparative study of home delivery service quality between non-food multi-channel retailers and pure Internet players. I aim to find out whether one kind of retailer is better than the other in providing home delivery service. And the survey result suggests that in general, pure players were perceived to provide better service quality than multi-channel retailers. Is this finding in line with your experience? If so, why should this be? What is the degree of variation in service quality within each sector?
3. What do you think may be the reasons for these differences?
4. What are the key issues do you think traditional brick-and-mortar retailers / catalogue retailers have to address when they decide to move online? What are the key differentiators in online retailing (customer service differentiators and logistics differentiators)?
5. Some logistics companies and parcel carriers told me that some retailers do not understand the real cost of e-fulfilment. Retailers invest too much in the front end such as website design, and they could invest more in the middle chunk (warehousing/picking/packing) and the back end (last mile delivery). What do you think of this point of view? (Retailers may get a quoted / flat rate so they lack an understanding of the true cost) Also, many established retailers do not have independent financial analysis of how much it costs to sell online and deliver to household.
6. To which extent do established retailers maintain the consistency across channels? Some retailers put selected SKUs online while others put the majority of their SKUs online.
7. To which extent do you think retailers use delivery charge to increase their margin and profitability? How common is that?
8. I was told that some conventional retailers focus on their core operation, i.e. stores and they only develop online channel as they feel they have to. The online channel doesn't get the same attention from stores. But a few other retailers prioritize the growth of online channel. What do you think?
9. What are the biggest constraints or problems that companies experience with e-fulfilment?
10. What are the key determinants of cost to serve in home delivery operation?

11. Please comment on the current state of the home delivery market:
- To what extent do 3PLs and carriers differ in efficiency and service quality? How do you have the impression, by word of mouth or by hard data?
 - Is the present 3PL market structure sustainable? Or is it likely to consolidate?
 - To what extent do carriers specialize by product group, customer and geographical area?
 - The degree of single vs multiple sourcing of transport in home delivery. What are the benefits of spreading traffic between several carriers? And to which extent can retailers get better rates by increasing the volumes?
12. What is your view of the so called ‘solutions to the last mile problems’?
- Reception boxes
 - Collection point
 - Home access systems
 - Drop and deliver
- Has your organisation any experience of them?
13. Your organisation is currently scoping a consumer satisfaction survey for home delivery. What is the scale of this survey and what are your main findings so far?
14. Has your organisation planned any delivery accreditation scheme to benchmark the home delivery service? Are you aware of any benchmark scheme of delivery standard in the industry?
15. Your organisation report says that the B2C online trading in 2005 is worth £19.6 billion. That figure includes electronically transferred products such as air tickets. Is there any separate figure for the expenditure of products that need physically transferred?
16. Amazon, the biggest pure Internet player, is planning to move its major distribution centres into Scotland. It has opened two RDCs in Scotland and plans to close or downsize the RDC in England due to lower costs, higher staff retention rate and the advantage of backhaul rates. Is it likely that other retailers will follow Amazon and develop distribution operations in Scotland or North England?

Appendix Eight

Company Address

Dear Mr. ZZZ,

I am a PhD student in the Logistics Research Centre at Heriot-Watt University where I am undertaking research into Internet shopping and the home delivery of non-food products. To find out what standard of service people expect from Internet retailing and whether they are satisfied with the service they have received, I have conducted a consumer questionnaire survey in Edinburgh and achieved good responses. I am now examining the logistical operations of online retailers and logistics service providers involved in home delivery. This should help to explain some of the differences in consumers' perception of home delivery services.

I would like to know, if it would be possible to arrange a meeting with you or a member of your staff during which I might enquire about your home delivery system and operation. I wonder whether you are willing to take part. This meeting, I expect, would last about an hour. Any information that you gave me would be recorded and analysed in the strictest confidence, and your company's name would not appear in any subsequent documentation. In return, we would provide with you a copy of our online shopping and home delivery survey results, which we hope you would find useful. Should you desire a summary of the company interview results, this I would gladly provide.

I would be most grateful if you would let me know if and when I might meet you. I look forward to hearing from you.

Yours sincerely,

Yuan Xing



Developing a framework for measuring physical distribution service quality of multi-channel and “pure player” internet retailers

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Abstract

Purpose – Many traditional retailers use the internet as a complementary business channel and thus sell products through multiple channels. In contrast, “pure player” internet retailers only sell products via the internet. A proliferation of pure players over the past few years has intensified competition in the online shopping market and the question of who is better at offering physical distribution service quality (PDSQ), multi-channel retailers or pure players, is open to debate. Despite PDSQ’s importance in an electronic commerce environment there are few studies to date and most have focused on general service quality of internet shopping. The purpose of this paper is to discuss this phenomenon and posit a conceptual framework for further investigation.

Design/methodology/approach – This paper reviews the literature to develop variables and constructs for investigation following the first stage of Churchill’s paradigm for scale development, which are presented in a framework based on the concept of order fulfilment as a key driver in electronic PDSQ, or e-PDSQ.

Research limitations/implications – The framework is presented for future investigation, thus there is no empirical study in this paper.

Practical implications – PDSQ has strategic importance for retailers to achieve competitive advantage and offer superior customer service, particularly for pure players as they are considered intangible services compared to their multi-channel competitors. This importance also extends to the e-commerce environment.

Originality/value – Earlier work has provided insight into how e-PDSQ, represented by availability, timeliness and reliability, is affected by pricing, transactions and firms. This paper extends this work and presents an e-PDSQ framework to investigate differences between multi-channel and pure player retailers.

Keywords Internet shopping, Retailers, Distribution, Customer services quality, Performance measurement (quality)

Paper type Conceptual paper

Introduction

The internet has rapidly developed as a commercial medium for retailers to do business. Electronic home shopping via the internet is referred to as business-to-consumer (B2C) e-commerce, which is all about speed, connectivity, information sharing, goods exchange and service (McKinnon, 2002; Javalgi and Ramsey, 2001). Consumers can order products over the internet and request delivery to their homes. The UK is leading Europe in internet shopping and e-tailing and on



average accounts for more than 3 per cent of all retail sales (Anon, 2004), while internet sales accounted for 6.8 per cent of all retail sales during Christmas, 2004 (IMRG, 2005).

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). Internet shopping is not considered a complete replacement for traditional shopping. However, more and more retailers are adopting the internet as an additional sales channel (Chadwick *et al.*, 2002). The rapid growth of pure players has initiated a debate as to which model is more efficient and provides better service: multi-channel or pure player retailers (White and Daniel, 2004; Klinger *et al.*, 2003).

Pure players and multi-channel retailers both try to increase their competitive advantage by improving customer service (Porter, 2001) and PDSQ is an important criterion. A pure player’s ability to make accurate and timely deliveries is a key indicator against which it is judged and how it can differentiate itself in this highly competitive market. Pure players are usually new entrants and have been found to provide reliable delivery as they rely more on PDSQ to build up their brands (Rabinovich and Bailey, 2004), and are also in a better position to start afresh (Intel, 2000). However, many multi-channel retailers boast of more experience and knowledge in handling logistics issues (Maltz *et al.*, 2004). The question of which firm structure is more efficient in delivery or fulfilment operations is thus worthy of debate and research. This paper takes a fresh approach in considering PDSQ between pure players and multi-channel retailers and presents an electronic PDSQ, or e-PDSQ, framework for future research that represents the first stage in Churchill’s (1979) process for scale and construct development.

Physical distribution service quality

Physical distribution

Physical distribution (PD) is generally regarded as part of a general logistics concept, which also includes marketing customer service (Mentzer *et al.*, 1989, 2001). PD deals with finished products and is considered part of a firm’s outbound logistics (Figure 1) that incorporates a relationship between the firm and its customers (Williamson *et al.*, 1990; Christopher, 1998).

PD provides time, place and form utilities that are crucial to customer service. Mentzer *et al.* (1989) and Rushton *et al.* (2000) examined the evolution and development

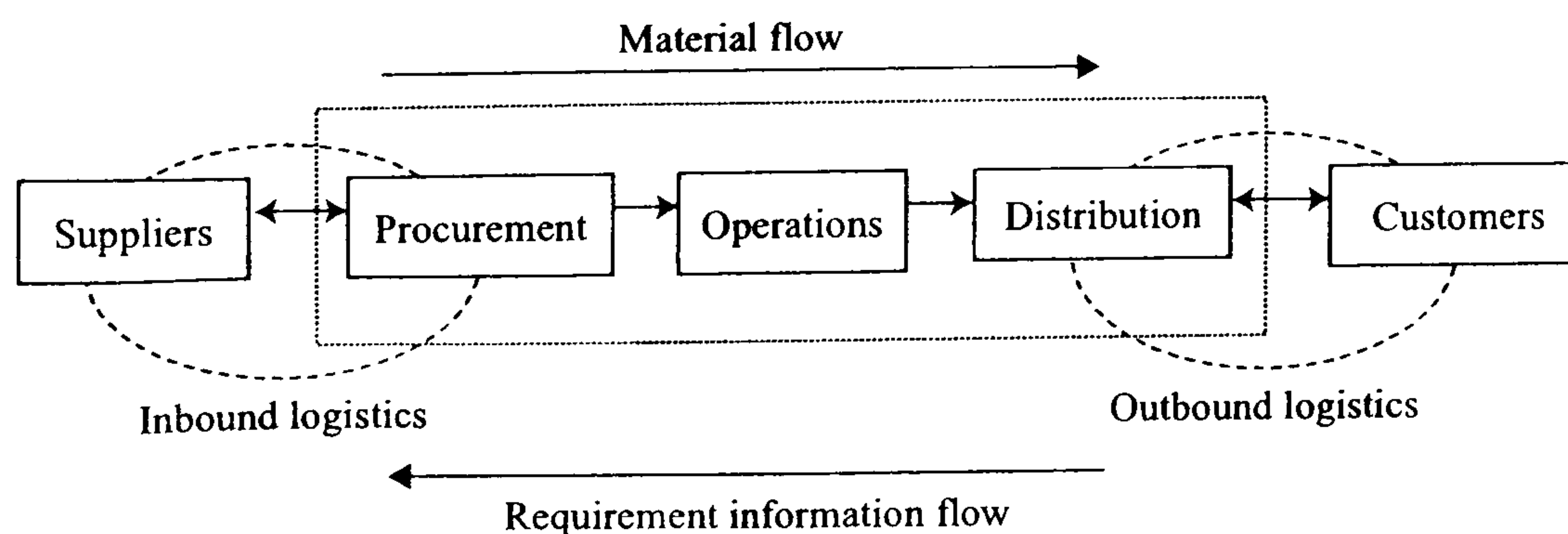


Figure 1.
Logistics management
process

Source: Adapted from Williamson *et al.* (1990)

of PD and argued that its importance has grown over time. Attendant features of physical distribution service (PDS) can provide a competitive advantage by differentiating companies with superior levels of service; the ability to deliver the right amount of the right product at the right place at the right time in the right condition at the right price with the right information is crucial in providing satisfactory customer service (Mentzer *et al.*, 2001).

Physical distribution service quality

Service quality (SQ) has been an important research topic in the marketing literature for some time beginning with Parasuraman *et al.*'s (1985) conceptual model. The delivery of high SQ strengthens corporate brands and contributes to consumer satisfaction. PDS is different from most other service industries in terms of who receives the service and the nature of the interaction (Bienstock *et al.*, 1997). PDS is applied to products, rather than people. The service supplier and the customer are physically separated. Contrary to other service industries where the service is intangible, PDS is somewhat "tangible", demonstrated by the condition and reception time of products that are being delivered. Notwithstanding, logistics activities are considered primarily services and the resultant value such intangible activities provide for consumers is difficult to measure and comprehend, particularly in an online context (Grant *et al.*, 2006).

While there have been many studies on SQ in services retailing, such as banks, hairdressers and professional services like accountancy, there has been relatively little research on PDSQ in physical goods retailing. Mentzer *et al.* (1989) conceptualised a PDSQ model that contained three dimensions: availability of products, timeliness of delivery and quality of delivery. Emerson and Grimm (1996) slightly refined this framework by adding communication as a fourth dimension emphasising the importance of order status information in improving SQ. Bienstock *et al.* (1997) developed a PDSQ assessment instrument in a business-to-business (B2B) context that contained three outcome dimensions: availability, timeliness and condition. Lastly, Mentzer *et al.* (2001) extended this framework into several other constructs, most of which were related to the ordering process.

This PDSQ research was based on a B2B, offline context. However, the various frameworks developed contribute important dimensions and insights for a study of e-PDSQ in B2C settings, and provide a basis on which an e-PDSQ B2C framework can be developed.

E-physical distribution service quality

B2C e-commerce

B2C e-commerce, also termed e-retailing (Burt and Sparks, 2003), is concerned with the buying and selling of goods and services between companies and consumers via the electronic media. Reynolds (2000, p. 417) noted "rarely has the retail and consumer services sector been faced with a strategic challenge of such significant complexity and uncertainty, which has grown in terms of that significance so rapidly". Chadwick *et al.* (2002) reviewed the UK retail sector's adoption of the internet as an alternative channel of communication, marketing and sales over a four-year period and underlined the important impact the internet has on the retail sector.

Today, most well-known retailers complement store sales with online sales. On the other hand, pure players sprang up and started to prosper during the late 1990s.

Despite unprecedented sales achieved by a few prominent pure players, a significant number of them went into trouble, if not bankruptcy during the shakeout period at the end of 2000. Yet the shakeout not only strengthened positions for leadership companies; it also provided precious lessons for late entrants. The online market now has not only recovered but is growing rapidly, although at a rate slower than some commentators have predicted (Ring and Tigert, 2001).

Electronic service quality

Electronic service quality or e-SQ is considered to be an important driver for the success of B2C e-commerce. Being able to delivery superior e-SQ is 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”. A considerable amount of research has been done on e-SQ and the criteria that consumers use to evaluate the SQ delivered through the web site have been explored widely. These criteria range from web site design, information availability and search, security issue, order transaction, to order delivery. Table I summarizes some main e-SQ studies.

Although Table I is only a selection of some major e-SQ studies, it does highlight some trends. Many studies focus on the consumer’s interface with the web sites, such as web site design and information availability. There has been less research related to fulfilment and consumer SQ. However, the fulfilment issue is attracting more and more attention from scholars due to the strategically practical importance of “last mile” home delivery.

Study	Web site design (ease of use)	Information availability and content	Security and privacy	Consumer service	Order delivery (fulfilment)
Lee and Lin (2005)	X	X	X	X	
Rabinovich Bailey and (2004)					X
Yang <i>et al.</i> (2004)	X	X	X	X	
Muyllé <i>et al.</i> (2004)	X	X			
Yang and Fang (2004)	X			X	X
Chen and Chang (2003)	X				X
Janda <i>et al.</i> (2002)	X	X	X		X
Liljander <i>et al.</i> (2002)	X	X	X		
Zeithaml <i>et al.</i> (2002)	X	X	X		X
Francis and White (2002)		X	X	X	X
Srinivasan <i>et al.</i> (2002)				X	
Loiacono <i>et al.</i> (2002)	X	X		X	
Yang <i>et al.</i> (2000)		X	X		
Szymanski and Hise (2000)	X	X	X		
Novak <i>et al.</i> (2000)	X	X	X	X	X
Kaynama and Black (2000)	X	X		X	
Dabholkar (1996)	X				X
Total	13	12	9	8	8

Table I.
Focus of e-service quality studies

E-physical distribution service quality

E-PDSQ is represented in the online shopping literature mainly by fulfilment. From a consumer's perspective, fulfilment is generally accepted as a crucial attribute affecting their judgment of SQ and satisfaction. Fulfilment is identified as a key component in affecting post-purchase satisfaction. Some consumers will also look at the delivery terms and conditions before they make purchase decisions. Retailers who claim to offer good, clear delivery service and multiple delivery options have a better chance to be patronised by consumers.

White and Daniel (2004) explored challenges faced by some multi-channel retailers by interviewing senior managers and order fulfilment was identified as one of the main issues concerned. Also, Wolfinbarger and Gilly (2003) examined consumers' perceptions of online retailing quality and found fulfilment to be the second largest and most consistent predictor of SQ after web site design. Chen and Chang (2003) considered superior fulfilment quality provides greater convenience to consumers and improves their confidence in using online transactions. Koster (2002) regarded order fulfilment to be of the utmost importance, as all online selling promises have to be realized through fulfilment processes.

Burt and Sparks (2003, p. 284) critically reviewed the impact of e-commerce on the process of retailing and position of retailers. Five process issues were discussed including the fulfilment issue which with home delivery was considered a "big question mark hanging over e-retailing in all the literature". Janda *et al.* (2002, p. 417) conceptualised an internet retail SQ framework consisting of five dimensions. One dimension was called performance and it contained transaction efficiency and delivery fulfilment components. They considered delivery fulfilment "measures a firm's accuracy in product delivery and its willingness to correct mistakes occurring during the transaction". Lavin (2002) highlighted order fulfilment as a particularly important issue during busy selling seasons such as Christmas.

The importance of PD to retailers in online selling is not new. During the internet frenzy of 1998-2000, Chen and Leteney (2000) performed case studies of online retailers and the issue of how to deliver products to the consumer ensuring a speedy and reliable supply was reported by companies to be their greatest problem. It was noted by Verdict (2001) that unreliable delivery was one of the major reasons that put consumers off purchasing online; consumers were also unhappy with few delivery options and complicated returns systems.

Home delivery operations have been identified as a barrier to online shopping success in the retail channel (Doherty *et al.*, 1999; Geuens *et al.*, 2003). Gurau *et al.* (2001) confirmed that online businesses were primarily directed to national or regional markets that had a well-developed logistics infrastructure. According to Boyer *et al.* (2003), consumers who are most likely to highly value order delivery service are also very demanding. Therefore, retailers need to carefully balance operational efficiency and consumer desirability. A UK Foresight (2001) home delivery report identified the unprecedented growth rate of the home shopping market and moving products over the "last mile" to the consumer's home to have great economic, social and environmental impacts.

Differences between PDSQ and e-PDSQ

PD of goods bought electronically can result in a reorganization of the supply chain. In the conventional self-service environment retailers acquire goods from wholesalers or manufacturers and then sell them to consumers through physical points of purchase.

Retail stores function as the end point of the distribution chain. The efforts of product selection, picking and transporting are born by self-serving consumers. They have to take care of the “last mile” delivery and their own “consumer logistics” (Teller *et al.*, 2005; Grant *et al.*, 2005). E-retailing separates order selection from order fulfilment (Burt and Sparks, 2003). Online shopping transfers the responsibility of delivery to the retailers so consumers become dependent on retailers to fulfil delivery. That has a profound impact on the supply chain; the supply chain is reshaped and extended to the household. Figure 2 compares the physical flow of goods between traditional and online retailing contexts.

Internet shopping also leads to disintermediation, the “removal of intermediaries in the supply chain in favour of the producer marketing directly to the consumer” (Chadwick *et al.*, 2002, p. 72). The fluctuation in consumer demand makes logistics more difficult to implement. For instance, Christmas time is normally a peak time for online shopping. If the holiday is coupled with the introduction of new products such as new books or music CDs, there will be a sudden increase of influx of orders. It is this uncertain nature of demand that makes fulfilment a big challenge for e-retailers.

Although e-PDSQ is becoming more important both academically and practically there are very few detailed studies in this area to date. One study by Rabinovich and Bailey (2004) provided insights in e-PDSQ, represented by inventory availability, delivery timeliness and reliability, is affected by attributes of pricing, transaction and firms. Measurement of their dimensions is shown in Table II.

Rabinovich and Bailey’s (2004, p. 668) study argued that multi-channel retailers exhibit better availability performance than their pure play competitors since multi-channel retailers have access to various distribution channel that yield “scale-economy synergies in inventory management”. Their study also showed that late entrants are more likely to rely heavily on PDSQ to gain competitive advantages. However, as the focus of the study was on the impact of the above attributes on the three e-PDSQ dimensions it did not examine who possesses superior timeliness and reliability performance: pure players or multi-channel retailers. All three dimensions were measured in time and other dimensions such as the condition and return were not taken into account. Our proposed framework below distinguishes itself in that it encompasses a broader range of dimensions and focuses on the comparison of these dimensions in e-PDSQ.

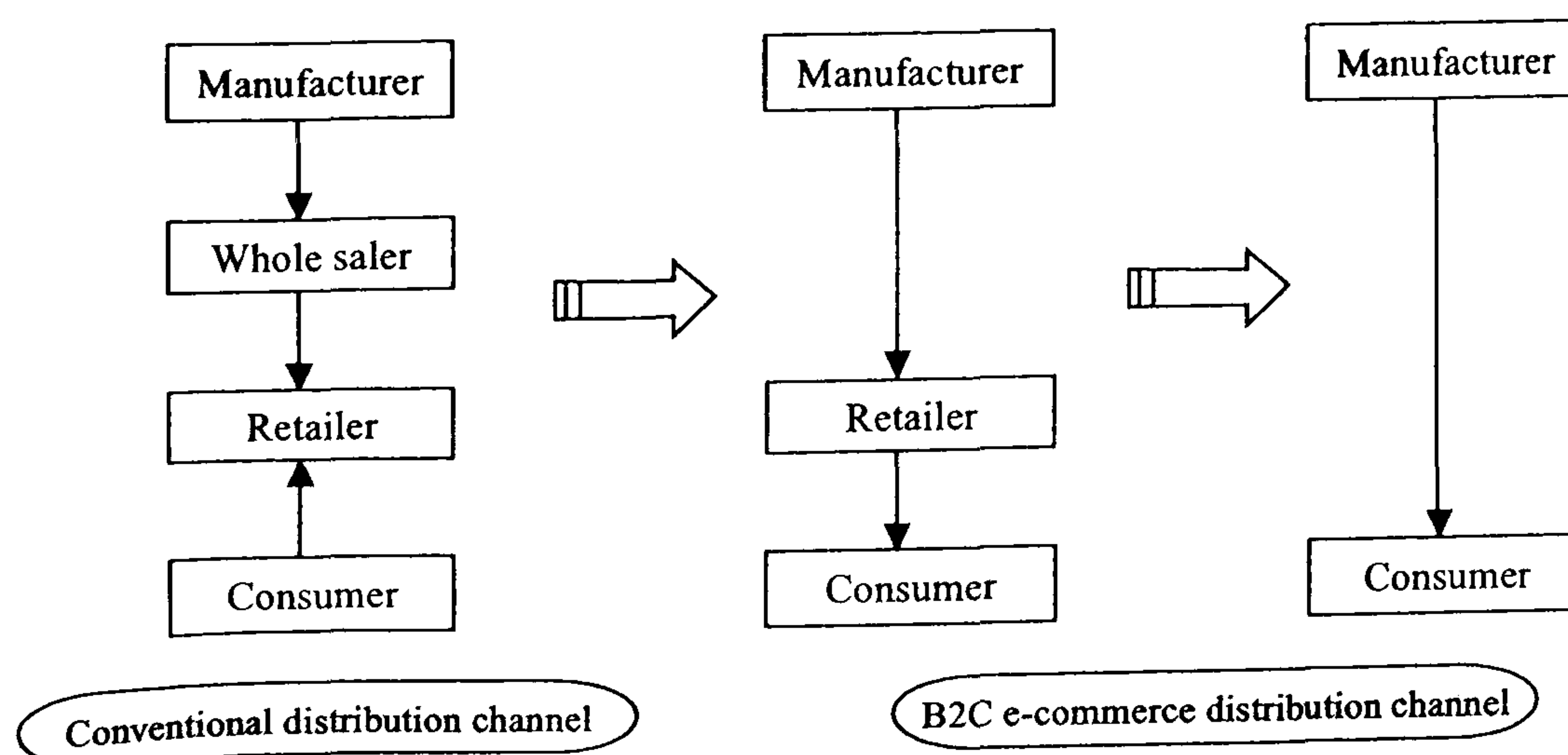


Figure 2. Disintermediation in the transformation of a conventional distribution channel to a B2C e-commerce channel

Multi-channel retailers

There has been some debate about which retail format is more likely to prevail in the future. Enders and Jelassi (2000) and Chen and Leteney (2000) argue the multi-channel type, i.e. an integration of real and virtual systems, is the way forward. They predict pure players will be forced to recognise the importance of physical presence and conventional stores and will eventually venture into a multi-channel mode. Maltz *et al.* (2004) and Gurau *et al.* (2001) highlight the advantage multi-channel retailers enjoy from a logistics point of view. They suggest established retailers already have a physical logistics system in place and are in a good competitive position to exploit the internet business channel. Multi-channel logistics professionals are able to bring their considerable experience to integrate these two channels, thus they are more likely to be successful. Porter (2001) analyses the internet marketplace and suggests that many successful companies are those who use the internet as a complement to traditional ways of competing. Established companies enjoy particular important synergies between their online and traditional operations.

Pure player retailers

There is a paucity of research into the pure player market, however, the study of Rabinovich and Bailey (2004) also showed that late internet retailing entrants exhibit superior timeliness performance. Owing to the intangible nature of their business, they 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 (Rabinovich and Bailey, 2004). Despite the advantages multi-channel retailers enjoy over pure players, the success of firms like Amazon, play.com and ebuyer.com demonstrates that pure players do 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).

E-PDSQ framework development

Based on PDSQ constructs developed by Mentzer *et al.* (1989), Bienstock *et al.* (1997) and Rabinovich and Bailey (2004), we have developed a framework from the consumer's perspective that addresses the issues facing retailers who sell on the internet, both multi-channel retailers and pure players. The framework consists of four dimensions, each including several variables (Table III). Three dimensions are derived from existing PDSQ constructs but most variables included are particular to an online context.

Availability	The interval between the moment when the consumer places the order and internet retailer ships the products to the consumer (click-to-ship time)
Timeliness	The interval between the moment when an order ships to the buyer and the moment when the buyer receives the order (ship-to-deliver time)
Reliability	The actual time from consumer order placement to delivery by the internet retailer minus the internet retailer's advertised expected time from order placement by the consumer to order delivery (click-to-deliver match)

Source: Rabinovich and Bailey (2004)

Table II.
Measurement of
dimensions

These four dimensions are shown in this proposed e-PDSQ framework in Figure 3 throughout the fulfilment process starting from order placement to order delivery and reception.

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). It is about how many choices the consumer has over the delivery date and time window; how quickly the consumer receives the order and whether the retailer’s actual performance matches its promise when the order is confirmed. Reliable, on time and quick delivery is of central significance for the consumer (Klaus *et al.*, 2001). The consumers are more likely to return products that arrive late and this point has an important impact on repeat purchase and the profitability of the business.

Availability refers to inventory capability, i.e. having inventory readily sourced to fulfil 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. Consumers would turn away if products they want are out of stock and another web site selling similar products is only a click away. Alternative offerings for substitution may be useful to retain consumers if used properly. Further, availability considers how a consumer would be able to track and trace their order; this ability to trace and track orders is important to consumers. Their perceived lack of control over delivery of their orders makes them more eager to know when to expect arrival of orders.

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. Nobody likes damaged or faulty products, which result in return or even cancellation of orders. The condition of products directly affects consumers’ perception of delivery SQ.

Dimensions	Variables
Timeliness	Choice of delivery date and delivery time window; deliver on the first date arranged and within a specified time slot
Availability	Confirmation of availability; substitution offer; order tracking and tracing system
Condition	Order accuracy and completeness; order in-transit damage; condition upon arrival
Return	Return channels options; promptness of collection; promptness of replacement

Table III. E-PDSQ framework dimensions and variables

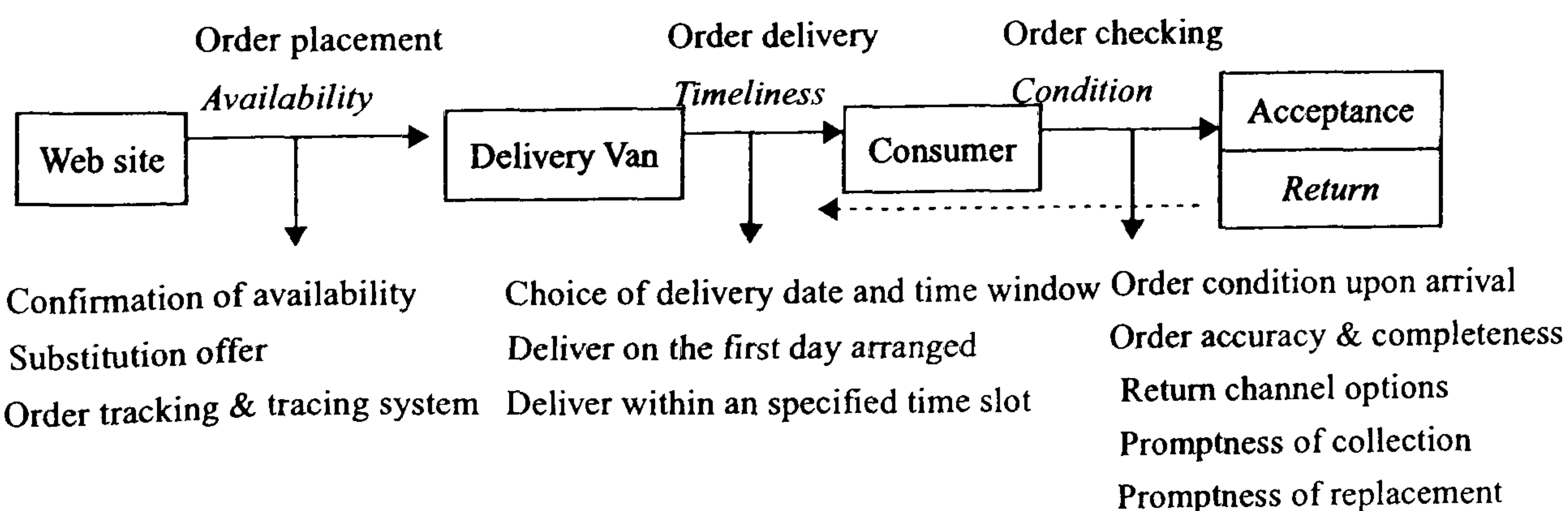


Figure 3. An e-PDSQ framework from the consumer’s perspective

Lastly, *Return* is a dimension particular to the online context. Return logistics refers to the process that products are returned from the point of consumption to retailer or supplier for possible repair, resale, recycling, etc. (Tarn *et al.*, 2003). It is about how the retailer deals with damaged, unwanted or faulty products; how many channel options consumers have to return the products; and how promptly the products can be collected or replaced. Convenient and easy ways for returns serve as an important facilitator for consumers using online shopping.

Conclusions

The internet has become part of our everyday life and online shopping is getting more and more popular. Physical distribution of goods bought electronically brings big changes in the supply chain. Bulky and homogeneous delivery of goods to stores is replaced by smaller, more frequent and heterogeneous delivery to households. These changes make it harder for retailers to provide speedy and accurate deliveries across a wide consumer base. E-PDSQ has strategic importance to an e-retailer's survival and success.

This paper has discussed these issues with respect to pure players and multi-channel retailers and has introduced an e-PDSQ framework. Future research could use this framework to investigate which of these two e-retailing systems exhibits better e-PDSQ related to the four dimensions, thus shedding light on practical retailing management. The framework represents the first stage of Churchill's (1979) two-stage process for scale and construct development. The first step of this two-stage methodology is to specify domain of the construct for this study, which we have identified as e-PDSQ, internet retailers and consumer satisfaction. The second step is to generate the items related to the constructs. We have developed four dimensions and twelve variables of e-PDSQ. Step three consists of using pilot surveys to test the variables and in step four the variables are purified using exploratory factor analysis, prior to conducting major empirical research in step five.

Thus, future research could confirm our propositions to determining external validity and generalisation of the constructs and variables by first validating them with a pilot study and subsequently checking various measures of validity through a second, larger study. Consumer questionnaire surveys could be conducted to investigate their perceptions of e-PDSQ provided by multi-channel retailers and pure players. The findings of such research should be able to provide retailers with a better understanding of the implications of their operations on consumers, and firm structure factors behind these implications. The research findings should also provide information on what consumers expect from retailers regarding e-PDSQ. By acknowledging consumers' expectations and understanding the advantages and disadvantages of their home delivery structure, retailers and their logistics service providers can better collaborate to offer more superior services to consumers. The results of such research would thus have important empirical value and provide useful insights into the ongoing development of internet shopping.

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**TEXT BOUND INTO
THE SPINE**

Conspiracy theory

PETER ROWLANDS editor

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From the feature on express parcels in this issue of *Fulfilment & e.logistics*, it's clear that something quite important is happening in the world of home deliveries.

In a word, parcels carriers are becoming more proactive. Instead of simply providing what they're ordered for by retailers, they're coming up with their own ideas for improving the reliability of the delivery process.

Whether it's texting customers to advise of arrival times (a Parceline service) or offering evening deliveries (Amtrak and Business Post, among others), carriers are trying to help make delivery less expensive and more satisfactory all round.

Yet they're doing it against the background of a constant rates battle. Retailers know that online consumers buy primarily on the basis of cost, so they're reluctant to take on any commitment that they feel can't be offset. As a result, great ideas from carriers for improving performance are still too often sacrificed to the god of price.

We feel it's time the carriers were given more credit for their efforts. But that means a change of mindset on the part of the retailers. They need to start seeing fulfilment as an integral part of what they're offering – and getting that point across to their customers. Only then, arguably, will they find a way to price the delivery options in a way that most consumers will accept.

Their problem goes back to the excitement that accompanied the dotcom revolution. The premise was that you sat in the comfort of your home, clicked on an item, and somehow it miraculously materialised outside your front door. It's nonsense, of course, but so far few retailers have had the nerve to say so often enough or firmly enough. So we're left with a tacit conspiracy between the retailers, who relegate fulfilment to their checkout page or an obscure set of FAQs, and consumers, who persuade themselves they can cope with the delivery, when half the time they haven't the first idea how to deal with it.

The tools are there now for improving delivery performance, and the carriers are ready. Arguably the retailers who elevate fulfilment to the front of the consumer promise will find themselves best-placed to seize the advantage. **fa**

UPDATE

HOME SHOPPING

Home delivery charges 'not reflecting performance or cost'

There is little evidence that the delivery charges applied by online retailers are directly associated with either product category or order value, according to new research at Heriot-Watt university. Nor does a high delivery charge necessarily equate with prompt delivery; if anything, products carrying a higher delivery charge tend to take longer to arrive.

Four out of five suppliers offer no time window selection among their options, the report says; and most of the rest offer merely the choice of a morning or afternoon slot.

When it comes to unattended delivery, however, the report suggests that many consumers are unwilling to help their own cause. In a survey conducted in connection with the research, nearly 60

per cent of respondents said there was not usually anyone at home to receive goods during the day – yet two thirds of these people said they would not expect to take time off to accept the goods. The result: up to a third of goods have to be delivered a second time.

More than half of respondents were unwilling to pay extra for weekend or evening delivery, the report says, though nearly a third said they would spend up to £2 for this.

The research was conducted by Yuan Xing, a postgraduate student at Heriot Watt, and based on questionnaires circulated in the Edinburgh area.

Home delivery – why it should mean fulfilment: News Extra
➔ page 15.

Consumers put off online sales by poor delivery offers

Sixty-two per cent of consumers will decide not to purchase a product if convenient delivery arrangements can't be made. People aged between 18 and 34 (the most active online shoppers) have the least patience when it comes to delivery issues.

These are among the findings of a survey by **WherelsMyDelivery.com**, a service which aims to advise consumers what time of day to expect a home delivery.

The company also says that **80 per cent of consumers have had to take holiday from work in order to take receipt of a delivery (most of them resented this), and 87 per cent of these have known occasions in which the delivery then failed to arrive.**

Online attractions woo suburban shoppers away from centres

Internet shopping is having a particularly adverse impact on high street locations serving extensive prosperous suburbs and rural hinterlands, according to research by CACI, the market intelligence company.

It cites Newcastle upon Tyne, Norwich and Nottingham as being particularly hard-hit by the online boom, along with locations such as Cambridge, Guildford and Bournemouth. It says cities and shopping centres with larger local shopping

populations are less affected, citing as examples Liverpool, Birmingham, Hull and Ilford.

CACI says it has come up with these findings by combining analysis of shopping patterns with research conducted by YouGov into internet spending habits.

It says the research suggests

that whilst younger age groups use the internet for networking, 30-to 50-year-olds are leading the way on spending. Categories of people drawn to online shopping include "Wealthy Executives" in the suburbs and "Prosperous Professionals" in the cities, it says, as well as Asian communities.

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Where Is My Delivery

Are you a stressed, frantic, mad as hell waiting for a parcel to be delivered? Are you too worried to go to the toilet let alone leave the house in case you miss your delivery? If so, the WherelsMyDelivery service may ease the stress placed on waiting for deliveries.

About Our Service

Over the last three years we have tracked, monitored and saved over 27.5 million delivery times and postcodes all over the UK. We now have the most comprehensive database available in order to make accurate delivery time assumptions.

Mr. Ben Lopez of Woking, Surrey was expecting a home delivery. He text "WMD GU21 2RW" to **81456**. Within minutes WherelsMyDelivery sent him back stating that deliveries to his road are made between 09.30 and 10.30 which allowed him to make plans for the rest of his day. His delivery arrived at 09.45.

Simply text WMD (space) and your postcode to 81456

Within minutes you will receive a text back detailing the estimated delivery time your delivery will arrive, based on previous deliveries to your road.

We are so confident in our service that if your delivery is outside of our estimated delivery time slot, we will refund the cost of your text message.

Text WMD plus your postcode NOW to 81456

Copyright (C) 2006 PDD Technologies Limited. All Rights Reserved. All texts to wherelsmydelivery.com will cost £3.50.

The main consumer-facing service offered by **WherelsMyDelivery.com** is deceptively simple. Customers just text their postcode to the company, and are sent a reply which indicates the time of day when home deliveries are most likely to be made to their address. The response doesn't

relate to a specific delivery or supplier. The cost is a flat £3.50. Behind this is a large database of past deliveries (the company says this contains 27.5 million postcodes and delivery times), providing a basis on which it can calculate typical delivery times to individual streets.

Fulfilment in home shopping - why it should mean just that

different delivery performance may not have hampered home shopping growth so far, but fulfilment could become a key market differentiator

Anyone with a penchant for statistics could have a field day with those emerging for the home shopping and delivery market at the moment. They imply a looming resource crisis, in which the infrastructure for handling all the underlying fulfilment activity will simply not be capable of sustaining the level of expectation being drummed up.

Admittedly, there is more or less irrefutable evidence that the online shopping market is continuing to grow massively. IMRG says online sales now account for around 10 per cent of all retail, and are growing at a rate of 45 per cent a year.

However, it's a precarious world for the retailers. According to a report from *HereIsMyDelivery.com*, 62 per cent of consumers will decide not to purchase a product if convenient delivery arrangements can't be made. Yet in a survey emanating from Heriot-Watt university and reported in this issue of *Fulfilment & e.logistics*, only about 3 per cent of online retailers offer their consumers selective delivery time slots.

Yet the Heriot-Watt survey found that nearly 60 per cent of shoppers don't actually expect to be at home to receive their deliveries. Presumably they just hope for the best.

Considering the apparent obstacles to successful online shopping, it's a wonder consumers aren't more disenchanted. Yet according to the Heriot-Watt research, 69 per cent of them think the service of their suppliers meets their expectations, and 28 per cent think the suppliers actually exceed expectations.

You might think this would leave the online retailers feeling pretty pleased with themselves; and indeed, perhaps it explains why so few have put more conspicuous resources into getting their delivery performance right so far. Why should they, when consumers are apparently prepared to put up with so many flaws in the system? But the headline figures conceal potential cracks in this logic. At the moment, one can see that the traditional retailers would have little sleep if consumers were to become disenchanted with online shopping as a whole. To a lot of them, internet shopping is seen as a distraction - even if it's done

on their own web sites.

When you look at recent statistics for high street retail, you begin to understand why. For the year ending last January, for instance, the British Retail Consortium says sales inched up just 0.2 per cent - the worst result since its measurements started in 1995. If high-street business is depressed anyway, a lot of traditional retailers don't want web shopping to depress it even more.

That's why many still seem to assume that if consumers can't get the service they want online, they'll simply return to the high street, reviving the retailers' earning potential in that market.

Fine; but what if consumers don't do this? The Heriot-Watt survey found that pure-play retailers already tend to come out better in performance terms than multi-channel retailers. If that performance gap gets conspicuously wider, the logical inference is that online shoppers will migrate increasingly to the pure-plays - or to those traditional retailers who do show that they take home shopping fulfilment seriously.

The worry is that the traditional retailers don't seem to be getting this message. Despite the hoards of apparently happy shoppers identified in the Heriot-Watt report, recent research by SiteMorse suggests that only one of the top 15 web sites operated by mainstream UK retailers actually performs up to what it considers an acceptable standard (this is based on a range of specific criteria it applies). And that includes sites operated by some of the biggest names on the high street.

To put it another way, a lot of the nation's leading online retailers are not yet running ideal web sites or delivery services.

That their web enterprises are flourishing at all might seem surprising, but when demand is growing as fast as it is in home shopping, in a way it's a sellers' market. However, anyone with a sense of history will realise that sellers' markets tend not to last very long. What seems likely to happen is that the better-performing players will eventually outstrip the rest. "That's what we'd expect," IMRG chief executive James Roper told us, "and we'd like to see fulfilment performance becoming a significant market differentiator."

That's why IMRG is currently putting so

much weight behind its IDIS (Internet Delivery Is Safe) campaign. It's trying to raise standards all round, and to reflect a growing sense of concern that the key

players are neglecting this key aspect of the business.

That neglect may be a worry, but it's also an opportunity. Fulfilment is part

of what consumers are buying into with home shopping, and as in any market, high quality and good value eventually will shine



To put it another way, a lot of the nation's leading online retailers are not yet running ideal web sites or delivery services

through. For retailers who not only grasp the fulfilment nettle firmly, but also build up a conspicuous reputation for having done so, the reward could be a market position that will be increasingly unassailable.

Who will be the first to claim the high ground? **FA**

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