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VOL. 1



**A Study of Customer Service, Customer Satisfaction and Service
Quality in the Logistics Function of the UK Food Processing
Industry**

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Volume I

**Thesis Presented for the Degree of PhD
The University of Edinburgh**

2003

Declaration

I declare that this thesis is my own work.

Signature.....

Date.....*25 April 2003*

Abstract

The aim of this thesis is to test the importance and sufficiency of existing constructs of customer service, customer satisfaction and service quality in the logistics function of the UK food processing industry. These activities represent ongoing challenges in the logistics discipline and are under-researched in this industry sector that is affected by primary producer crises, product commoditisation and increasing retailer power. Firms that improve customer service should increase customer satisfaction resulting in better customer-supplier relationships, increased customer loyalty, profitability and a differential competitive advantage. The customer-supplier dyadic exchange between intermediary food processors is the focus of study. There has been little programmatic and integrative study or empirical research of these activities in logistics since work conducted over twenty-five years ago by La Londe and Zinzser. Additionally, some existing studies suffer from a general lack of rigour that pervades the logistics discipline and has prevented meaningful development of research validity and reliability. Finally, existing research into these activities from the marketing discipline is under-utilised in these investigations. Indeed, there has been limited inter-disciplinary research in logistics notwithstanding the genesis of both logistics and marketing as a single discipline at the beginning of the 20th century. This study uses a rigorous two-stage methodology developed for marketing research by Churchill. This methodology comprises generating variables for enquiry from a literature review, collecting and analysing data in a pilot survey to purify variables, and conducting a second survey to assess reliability and validity of pilot study findings. Models used for the study are adapted from existing work in marketing service quality by Parasuraman, Zeithaml and Berry and are supplemented by relationship constructs emerging from the pilot study. A postal survey was administered to 1,215 UK food processors. Respondent data was analysed using exploratory and confirmatory factor analysis and structural equation modelling to test variables and constructs. The findings of this study validate constructs of pre-transaction, order service and quality and relationship service and quality, thus reaffirming original constructs developed by La Londe and Zinzser. The findings also falsify transaction service quality constructs posited by Parasuraman, Zeithaml and Berry. Issues of price, supplier importance, supplier switching, and relationship power were tested, but did not feature in resultant constructs. These latter issues are discussed in terms of an overarching framework that encompasses the validated constructs and an extended model is hypothesised for future study. The results of this thesis indicate that UK food processors should consider all phases of pre-transaction, transaction and post-transaction events when facilitating operations design and customer service planning.

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CHAPTER ONE

INTRODUCTION

1.1 RESEARCH BACKGROUND

The aim of this thesis is to test the importance and sufficiency of existing constructs of customer service, customer satisfaction and service quality in the logistics function of the UK food processing industry. Customer service, customer satisfaction and service quality continue to be important and relevant challenges for the logistics discipline (Christopher 1999, Hale 1999). Customer service research in logistics began in the early 1970's and Kent and Flint (1997) have argued it will remain a key component of future logistics research.

However, whilst there has been considerable discussion of these issues in the logistics literature there has been little empirical work done. Only 22 empirical articles have been published over the last 25 years; this is not a significant output and suggests a need to increase such research to meet Kent and Flint's supposition. PhD research in North America and the UK of these issues is also under-represented within the discipline. There have been 40 customer service PhDs awarded during the same time span, representing only 2.8% of 1,443 logistics PhDs awarded (Stock 1987, 1988, 2001, Stock and Luhrsen 1993).

Logistics and customer service are linked through the concept of process and the outcome of meeting customer needs. Customer service as a process provides features or variables of customer service to meet customer needs, and customers who perceive a successful outcome of a service event achieve a state of customer satisfaction. The premiss that customer satisfaction is also an outcome of service

quality provides a point of departure for understanding customer service and satisfaction in logistics. Service quality is well established in the marketing literature and several frameworks have been developed for its study using customer perceptions compared to expectations (Parasuraman, Zeithaml and Berry 1985, 1988). The notion of an event suggests there should also be consideration of service quality provided throughout the event.

There has also been little programmatic and integrative study of customer service, customer satisfaction and service quality in logistics (Innis and La Londe 1994, La Londe and Zinszer 1976). There is also little consensus regarding important variables and constructs of customer service, customer satisfaction and service quality in logistics. Whilst some work has been done in the area of logistics customer service, there is less work in the areas of customer satisfaction and service quality, and the integration of all three concepts in logistics contexts. Existing research into these activities from the marketing discipline is also under-utilised in these investigations. Indeed, there has been limited inter-disciplinary research in logistics notwithstanding the genesis of both logistics and marketing as a single discipline at the beginning of the 20th century (Bartels 1982, 1988, Harris and Stock 1985).

Over one-third of the empirical research has focussed solely on the supplier's perspective as opposed to the customer's perspective (Christopher 1986, Sterling and Lambert 1989). Logistics activities exhibit similar characteristics to services within the marketing discipline and usually do not alter form or shape of a product. The focus of most studies has also been on service attributes rather than the environment under which customers operate, with little research conducted on logistics effects in the service sector or on logistics services themselves.

The impact of customer service, customer satisfaction and service quality on such an experience and a firm's customers and profits may be significant. However, firms should not believe that meeting or exceeding expectations alone satisfies customers, and thus should not 'manage expectations' by lowering them to produce higher customer satisfaction. This approach ignores positive effects of high expectations in

creating better service environments and experiences. Firms that do so and improve customer service should develop a differential competitive advantage. Customers who are satisfied with a firm's products or services from exceptional customer service will develop increased customer loyalty, make repeat and increased purchases, and enter long term relationships; all of which will improve corporate financial performance (Daugherty, Stank and Ellinger 1998, Emerson and Grimm 1998, Manrodt and Davis 1993).

The marketing and logistics literature on relationships or partnerships outlines potential benefits available to customers and suppliers entering into such arrangements. The literature calls for establishing relationships or partnerships with suppliers in order to build trust and loyalty, develop effective long-term strategies, and be pro-active to customer needs (Bowersox 1988, Christopher, Payne and Ballantyne 1991, Morgan and Hunt 1994).

Some existing studies suffer from a general lack of rigour that pervades the logistics discipline and has prevented meaningful development of research validity and reliability. Some of the empirical work also lacks quality regarding theoretical development as well as analytical rigour, and this is seen as a pressing requirement for future logistics research (Mentzer and Kahn 1995, Mentzer and Flint 1997).

1.2 CONTEXT OF STUDY

The context of study is the customer-supplier dyadic exchange between selected intermediary UK food processors. Such processors in the food supply chain are of special interest. Not only are they part of a traditional manufacturing sector and thus have their own customer service requirements, but they are also closely connected with agriculture on the one hand, and retailing on the other (Strak and Morgan 1995). A 'typical' food and grocery supply chain is shown in Figure 1.1.

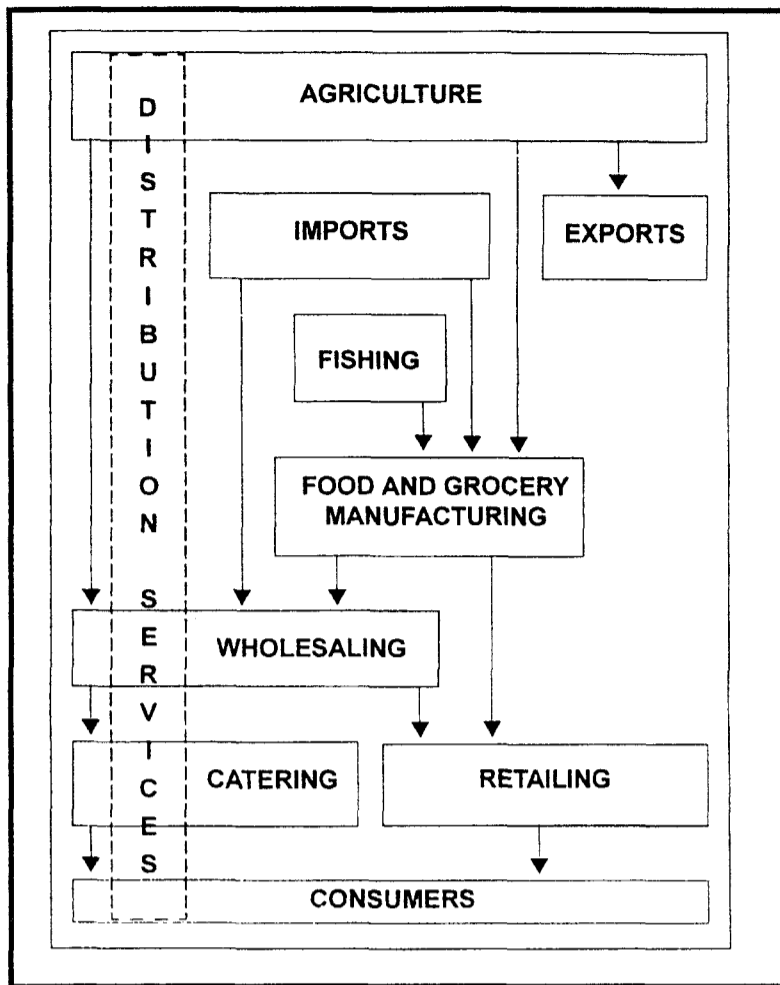


Figure 1.1: A 'Typical' Food and Grocery Supply Chain

(Source: Boitoult 1997 p.33)

Tansey and Worsley presented the following on the nature of the food industry and the motivations of actors within in it.

It uses an industrial approach to agriculture and food production, is highly productive in response to high inputs and overcomes seasonality for all foods. In the development of this food system, foods became more and more like commodities, rather than matters of life and death, or of religious and cultural meaning. Commodities are produced, traded and transformed, bought and sold, in a market whose reach has extended from a largely local level to an increasingly global stage. It is a market in which actors seek to control their costs, their production or marketing practices, as closely as they can. They want to minimize their uncertainties and costs and maximize their returns. It is a market in which each actor is thrown into competition with others, both within their areas of operation and outside them (1995 pp.47-48).

This concept of food products as industrial commodities suggests an industry structure of short-term, transactional exchange driven by quality, quick response and price. Tansey and Worsley (1995) argued that larger, global food manufacturers have put new pressures on all suppliers to provide standardised products of superior

quality at fixed prices. Thus, the nature of competition in this industry does not appear conducive to good relationship development and maintenance considered necessary in supply chains.

The fresh food processing sub-sectors of the UK, excluding fruit and vegetables, were selected for this study. Several authors have noted their significance in terms of economic output, accounting for over one-half of activity and over one-third of employment in the UK food chain (Ennew, McDonald, Morgan and Strak 1995, Gunthorpe, Ingham and Palmer 1995, Griffiths 1999, Fenn 2000). These sub-sectors are characterised by a large number of small firms in terms of value added and number of employees. However, there is also a concentration of large firms that account for over 60% of value added (Browne and Allen 1997a, 1997b, Food Chain Group 1999), but whilst there is substantial concentration in these sub-sectors, there are still many relatively small firms. Around 85% of companies had “less than 50 employees and 60% had fewer than 10 employees in 1995” (Browne and Allen 1997b p.35).

Ennew and McDonald noted that “despite its importance to the economy as a whole, the food industry is relatively under-researched” and “food processing and food retailing have received rather less attention” than primary agricultural research (1995 p.41). They further argued that understanding food production and consumption requires “analyses of the behaviour of firms within the food processing and retailing sectors” (ibid.). Such behaviour would include aspects of customer service and satisfaction and relationships in logistics services related to food processing.

1.3 RESEARCH PROBLEM

Three research questions are proposed for study and follow from the above background. Firstly, which customer service variables examined so far in the literature do firms expect suppliers to provide, how important are these variables, and are there any other variables that are important? Secondly, do firms achieve satisfaction from a single service delivery event as a result of a supplier providing

variables of customer service? If they do not are there any key discriminating variables? And finally, do any of these variables underlie constructs of logistics customer service that are different or similar to constructs found in the literature? These questions are set out as a conceptual model in Chapter Seven, which is adapted from Mentzer, Gomes and Krapfel's (1989) model of marketing and logistics customer service and satisfaction, and integrates the service quality work of Parasuraman, Zeithaml and Berry (1985, 1988) that examined expectations and perceptions of customers. These research questions thus synthesise the literature in logistics customer service, customer satisfaction and service quality and provide an integrative and inter-disciplinary perspective to the study of these activities.

1.4 RESEARCH METHODOLOGY

The research is descriptive and explanatory regarding the variables and constructs of customer service, customer satisfaction and service quality. It is also concerned with investigating these items across a sample of one industrial sector. Thus the quantitative approach undertaken in this thesis is appropriate, and consistent with the nature of positivist enquiry as discussed by Hunt (1983, 1991).

This study uses a rigorous two-stage methodology developed for marketing research by Churchill (1979) and applied to a logistics context by Dunn, Seaker and Waller (1994). This methodology, hereinafter termed the Churchill et al. framework, comprises generating variables for enquiry from a literature review, collecting and analysing data in a pilot survey to 'purify' variables, and conducting a second survey to assess reliability and validity of the pilot study findings.

Postal surveys are administered in both stages of the Churchill et al. framework for data collection. Descriptive statistics, including data frequencies, means, standard deviations and cross-tabulations, are performed for all data in both studies. The pilot study, as the first stage of the Churchill et al. framework, also considers respondents' expectations and perceptions regarding their service event similar to Parasuraman, Zeithaml and Berry's (1988) SERVQUAL instrument. Exploratory factor analysis

(EFA) is used to examine any latent constructs and internal consistency of individual items in the pilot study. EFA is a multi-variate analysis technique that determines underlying dimensions or factors in a set of correlated variables, and is used when underlying factors are not known a priori (Child 1990, Hair, Anderson, Tatham and Black 1995, Loehlin 1998, Nunnally and Bernstein 1994).

The main study, as the second stage of the Churchill et al. framework, uses confirmatory factor analysis (CFA) and structural equation modelling (SEM) to determine the validity, reliability and relationships amongst remaining variables and latent constructs. CFA is different from EFA in that it attempts to confirm or test a priori hypotheses about the possible factor structures by fitting variables to them (Child 1990, Hair, Anderson, Tatham and Black 1995, Loehlin 1998). SEM is also a multi-variate analysis technique that examines a set of dependence relationships simultaneously using regression and covariance analysis amongst latent constructs (Hair, Anderson, Tatham and Black 1995, Loehlin 1998, Schumacker and Lomax 1996). Full SEM consists of a two-stage approach using a measurement model and a structural model (Anderson and Gerbing 1988).

1.5 THESIS OUTLINE

The thesis is divided into two parts that firstly discusses background literature for the study (Chapters Two to Seven) and then presents the research undertaken (Chapters Eight to Eleven). Chapter Twelve concludes the thesis and discusses its various contributions.

1.5.1 Background Literature

Chapter Two discusses methods employed for the literature review of this study and the nature of logistics and marketing. Logistics is a process for effecting the time and place utility of customers through activities of transport, warehousing, inventory management, and information processing. Logistics became a separate field of study with the advent of the marketing concept despite originally being part of a marketing and distribution discipline. However the output of both logistics and marketing is

satisfaction of customer needs. Logistics activities are considered services as they have similar characteristics, and do not usually alter the form or shape of a product. Accordingly, logistics and marketing are combined for study in this thesis.

Chapter Three introduces concepts of customer service. Whilst there is no consensus about a definition, customer service for this study is presented as providing value added benefits to customers in a dyadic exchange whilst ensuring that costs incurred do not exceed any benefits to the supplier.

Chapter Four discusses customer satisfaction or dissatisfaction as the output of a firm's customer service strategy, and customer satisfaction's relationship with service quality. Customer satisfaction is defined as the customer's fulfilment response with respect to a product or service. The primary satisfaction framework used is the expectancy-disconfirmation paradigm. In this paradigm customers develop expectations prior to an event and afterwards either confirm or disconfirm, e.g. refute, those expectations. Customer satisfaction is also seen as an outcome of service quality, which also uses perceptions compared to a priori expectations to assess quality.

Chapter Five discusses the importance of logistics to the firm. Firms need to generate profits to carry on their business and that entails meeting the needs of all their stakeholders, including customers. Empirical studies discussed provide frameworks and evidence that illustrate parts of a link from customer service→customer satisfaction→loyalty→better firm performance and profitability.

Chapter Six discusses customer-supplier relationships and the potential benefits available to both sides of the dyadic exchange, including increased long-term profits fundamental to a firm's long-run success and health. However, some empirical evidence suggests customers may not be willing to embrace relationships as readily as suppliers. As a result customers revert to purchase behaviours related to transactional issues of cost and price.

Chapter Seven examines empirical studies of customer service, customer satisfaction and service quality in logistics. Whilst there has been some research done in customer service, much of the research has focussed on the supplier's perspective. There has also been little work done on customer satisfaction, and not a significant amount of work done regarding customer service and satisfaction integrated in a logistics context, applied to a single industry, or from a services marketing perspective.

1.5.2 The Research

Chapter Eight discusses the research objectives, approach and methods undertaken in this thesis. It justifies the positivist and quantitative research approach adopted within the contexts of the logistics and marketing disciplines and discusses the Churchill et al. framework for the development of measurement scales. The chapter also describes the application of the two-stage approach found in the framework and outlines details of both the pilot and main studies that comprise the primary research components of this thesis, including the UK food processing industry sector and research samples, data collection, research instruments and analysis tools.

Chapter Nine discusses the pilot study that utilises a postal survey sent to 380 Scottish food processing firms. Findings confirm the domain of constructs being investigated and items generated for investigation, in accordance with the first stage of the Churchill et al. framework. A dichotomous finding between important transactional variables and relationship factors leads to follow-up interviews with respondents to confirm the importance of both to guide the main study.

Chapter Ten discusses the main study, which represents the second stage of the Churchill et al. framework, to assess construct validity by testing 'purified' measures from the first stage with new data. The main study model is derived from a model of transaction and global satisfaction developed by Parasuraman, Zeithaml and Berry (1994), and is amended to include constructs of relationship service and quality. SEM analysis of the proposed main study model necessitated a reconceptualisation and re-analysis of the model to develop a better model fit and ensure statistical

validity and reliability. Reconceptualisation was based on an EFA of the tested variables and proposed two different constructs to those posited in the Parasuraman, Zeithaml and Berry (1994) model. Findings confirm construct validity and reliability of the reconceptualised model in accordance with the entire Churchill et al. framework and provide a substantive and rigorous set of results.

Chapter Eleven provides a theoretical interpretation of the models in this thesis and their meaning for knowledge creation. A hypothesised extension to the main study model is suggested to consider constructs of price and supplier selection as they relate to the main study model constructs.

1.6 THESIS DELIMITATIONS

The delimitations of this thesis, i.e. boundaries within the researcher's control, are presented in Figure 1.2. The delimitations concern the unit and industry of analysis. The unit of analysis is the customer-supplier dyad focussing on the customer's attitudes and perceptions of their immediate or Tier 1 suppliers in general, and one supplier in particular regarding the logistics service of a specific delivery event. The thesis does not investigate Tier 2 or a supplier's suppliers or a customer's customers. The rationale for this unit of analysis is provided in Chapter Three.

The industry of analysis in the UK food supply chain is the fresh food-processing sector of meat, seafood, poultry and game, and dairy, excluding fresh fruit and vegetables that are generally not processed. This thesis does not consider primary producers, e.g. as farmers and fishermen, or food retailers except where respondents may be involved in one of these activities together with processing. For example, a dairy farmer that also produces cheese or an abattoir may also sell to consumers via a shop on the premises. The rationale for this industry of analysis is provided in Chapter Eight.

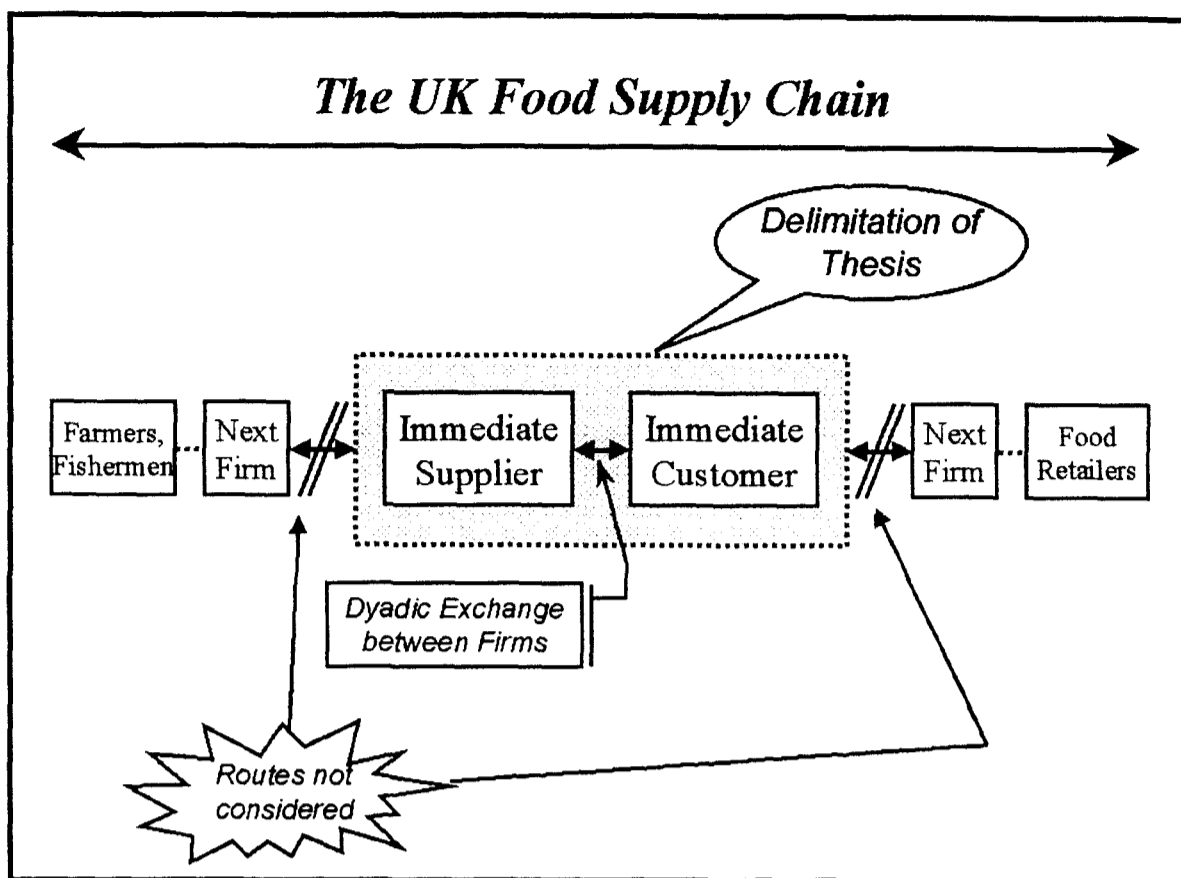


Figure 1.2: Thesis Delimitations

1.7 SUMMARY

This chapter has laid the foundations for this thesis. It introduced the research context and set out the research problem and questions. The methodology was briefly described and justified. Finally, the outline of the thesis was presented and thesis delimitations given. On these foundations the thesis can proceed with a detailed discussions of the background literature.

Part One – Background Literature

CHAPTER TWO

LOGISTICS AND MARKETING

2.1 INTRODUCTION

Chapter One set out the purpose for this study, the surrounding topics of interest, and this study's relevance. This chapter begins a review of the background literature underpinning this study by discussing issues surrounding the disciplines of logistics and marketing. The schema for the literature review is to examine the fields of logistics and marketing for key trends and concepts, issues of integration, customer service and customer satisfaction, and impacts these issues may have on the firm and supplier-customer relationships.

This review incorporated several methods to ensure no significant contribution or source was omitted. Initially, electronic library databases were interrogated with keywords, e.g. 'logistics,' customer service' and 'relationships.' This method proved unsatisfactory as results often missed key articles already found in academic journals that were part of the electronic database being searched. Due to this inconsistency entire volumes of the major logistics and marketing academic journals were then examined in the library stacks or via on-line journal indexes.

In the case of logistics journals, the review extended back to the mid-1970s, when customer service and satisfaction were first appearing in the major journals as outlined in Chapter Three. In the case of marketing journals, the review extended back to the mid-1980s to capture the elements of the customer service and satisfaction, services marketing, service quality and relationship marketing debates. Reference lists and bibliographies also provided new sources as key articles were

found. As discussed in later chapters these article citations were cross-referenced as a validity measure of completeness. Logistics trade and practitioner publications were also examined from the early 1990s onward to understand industrial concerns and comments on the topics of interest. Finally, interviews were held with some logistics academics for their comments and views on topics of interest in this study.

The remainder of this chapter sets out the background for this study as it concerns the disciplines of logistics and marketing and is organised into sections as follows. First, a discussion of definitions for logistics and supply chain management is provided. Then, the history and development of logistics in a business context are explored before a discussion of marketing and its relationship to logistics and its role as a service offering for customers. Lastly, conclusions to this chapter are drawn.

2.2 DEFINITIONS

2.2.1 Definition of Logistics

The definition of logistics used for this study is the Council of Logistics Management (CLM) definition provided on their Internet site (2002, see also Stock and Lambert 2001 p.4):

Logistics is that part of the supply chain process that plans, implements, and controls the efficient, effective flow and storage of goods, services, and related information from the point of origin to the point of consumption in order to meet customers' requirements.

This definition is appropriate for this study as it is concerned with the movement of goods and services from a supplier to its primary customer as actors in a dyadic exchange. However, an exploration of the definition and its variants follows to highlight confusion in the literature regarding the definition and its meaning and to demonstrate the applicability and relevance of the CLM definition to this study.

The current CLM definition is an amendment of an earlier CLM definition, presented in 1986 as: "the process of planning, implementing and controlling the efficient, cost-effective flow and storage of raw materials, in-process inventory, finished

goods, and related information from point-of-origin to point-of-consumption for the purpose of conforming to customer requirements” (Lambert and Stock 1993 p.4, Kent and Flint 1997 p.20). The amendment recognises logistics as being a subset of a supply chain process and supply chain management (SCM). However, activities and outputs of logistics continue to be defined as being related to satisfying a customer’s needs.

Collins Dictionary (1998 p.912) provides three distinct definitions of logistics:

1 the science of the movement, supplying, and maintenance of military forces in the field. 2 the management of materials through an organization, from raw materials through to finished goods. 3 the detailed planning and organization of any large complex operation.

The first and third dictionary definitions are not relevant to this study, as it is not concerned with military matters or general organisational operations. Logistics does however impact a firm’s strategy and profitability and this matter will be discussed further in Chapter Five. The second dictionary definition is similar to both CLM definitions and describes a process for producing a product or service for ultimate consumption. Whilst the dictionary definition relates specifically to a single organisation, the CLM definitions are less clear and could include all organisations involved in this production depending on the definition of points of origin and consumption.

Two key points emerge from the second dictionary and the two CLM definitions: (1) a process is undertaken to (2) achieve an outcome meeting customer requirements or needs. Activities involved in the process include transportation, storage and warehousing, inventory issues, flow of relevant information, and production scheduling impacted by the other activities (Lambert and Stock 1993, Christopher 1998, Stock and Lambert 2001). These activities can affect goods that are both inbound and outbound from a firm (Porter 1985, Lambert and Stock 1993, Christopher 1998, Stock and Lambert 2001). The outcome of meeting and satisfying customer needs is akin to the marketing concept discussed later in this chapter.

The Canadian Association of Supply Chain & Logistics Management has adopted the 1986 CLM definition verbatim. However it also notes on its Internet site (2002) that:

Michigan State University explains logistics as follows: 'Logistics typically includes functional responsibilities for forecasting customer service, transportation, warehousing and inventory management.' They view supply chain management as strategic. When a firm's management makes a unique effort to strategically position and align distributive capabilities to gain and maintain competitive advantage, the process is referred to as supply chain management.

This notation considers logistics as a functional process within the strategic concept of SCM and appears to contradict the third dictionary definition. Definitions of the supply chain (SC) and SCM are also confusing and the next section provides a discussion of both to set their context for this study.

2.2.2 Definition of Supply Chain Management

Collins Dictionary defines a supply chain as "a channel of distribution beginning with the supplier of materials or components, extending through a manufacturing process to the distributor and retailer, and ultimately to the consumer" (1998 p.1539). This definition of a supply chain appears equivalent to the CLM definition of logistics and infers SCM is similar to channel management if a supply chain is considered equivalent to a channel of distribution. Kotler defined marketing channels or distribution channels as "...sets of interdependent organizations involved in the process for making a product or service available for use or consumption" (2000 p.490). The concept of channels suggests more than one firm is involved in the logistics and SCM processes defined by the CLM and *Collins Dictionary*. However other authors have argued differently and there continues to be debate in the literature concerning the definition of SCM and its relationship to logistics.

The term SCM was first used by consultants in the early 1980s but it wasn't until the early 1990s that academics first attempted to differentiate it from logistics on a theoretical basis (Cooper, Lambert and Pagh 1997, Lambert, Cooper and Pagh 1998, Lambert and Cooper 2000, Lambert 2001, Stock and Lambert 2001). Some have argued that many academics and practitioners consider logistics management and

SCM to be interchangeable terms and concepts (Cooper, Lambert and Pagh 1997, New 1997, Otto and Kotzab 1999, Stock and Lambert 2001). Others have argued that SCM “does not possess unitary definition or demonstrate singular application” because “it is a curiously eclectic subject area, the rich and diverse composition of which seems to be in a state of constant flux” and “there is little point in seeking to document a perfect definition for supply chain management” (Hall and Braithwaite 2001 p.82). In terms of purpose, SCM was initially conceived as an “operative tool to lower inventory levels” but has evolved into “a strategic tool for ensuring overall business success” (Kotzab 2000a p.180).

Further, Cooper, Lambert and Pagh have argued there is a difference between logistics and SCM due to “a need for the integration of business operations in the supply chain that goes beyond logistics” (1997 p.1). They have termed this integration SCM. Such integration also goes beyond an individual firm to encompass its suppliers, customers and other interested parties (Cooper, Lambert and Pagh 1997, Christopher 1998, Lambert, Cooper and Pagh 1998, Mentzer 2000, Lambert and Cooper 2000, Lambert 2001).

This concept of integration is contained in the UK’s Institute of Logistics and Transport (IOLT) definition on its Internet site (2002):

Logistics is the time-related positioning of resource, or the strategic management of the total supply-chain. The supply-chain is a sequence of events intended to satisfy a customer. It can include procurement, manufacture, distribution, and waste disposal, together with associated transport, storage and information technology. The application of logistics is essential to the efficient management of the supply-chain. Transport is an integral part of the supply-chain, not only between the sequence of events but during the processes.

The IOLT definition indicates logistics is an integral element for SCM and denotes the SC as a sequence of events, as opposed to a formal structure, whose purpose is to meet customer needs. The IOLT’s Internet site also provides a flowchart (Figure 2.1) to illustrate these concepts. The flowchart appears to apply to several organisations involved in the various processes. The flowchart also uses the term physical distribution that stems from marketing and channels of distribution and is further

discussed in section 2.4.2. The IOLT's proposition that logistics strategically prevails over SCM contradicts Cooper, Lambert and Pagh.

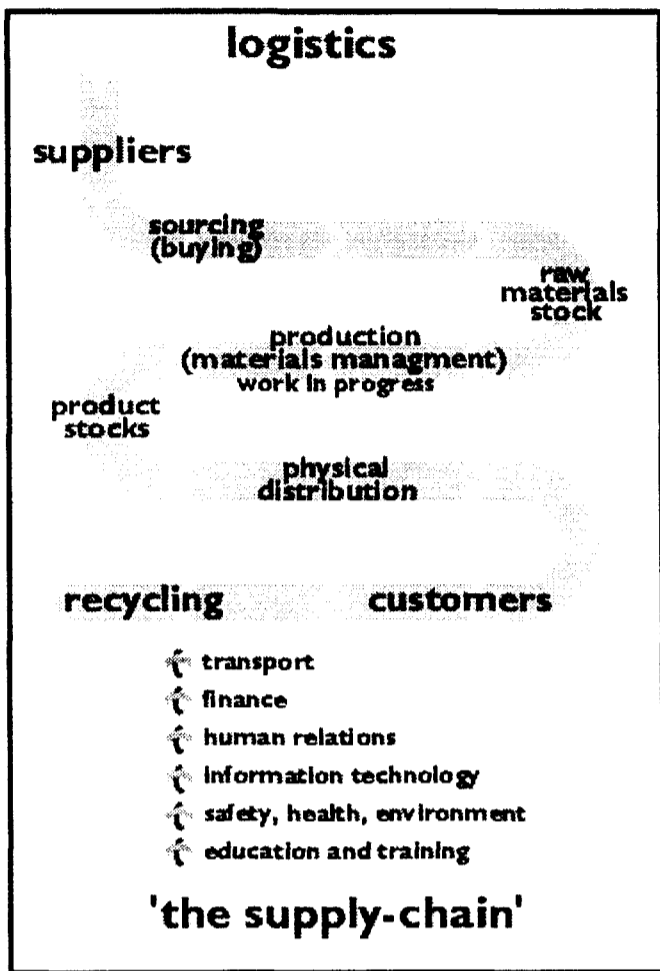


Figure 2.1: The Institute of Logistics and Transport Flow Chart
 (Source: www.iolt.org.uk)

This contradiction is also present in Canada's Logistics Institute (LI) definition on its Internet site (2002):

Logistics includes: The services involved with effective movement of materials and information from source to consumption. The process of managing the total supply chain to increase efficiency and best support your customers. The process team made up of functional specialists in purchasing, production planning/demand forecasting, inventory control, materials handling, warehousing, transportation, distribution, order processing, and customer service. The work ethic of getting the right product to the right place in the right condition at the right time and for the right price. The competitive strategy needed to meet customer demand. It is a determining factor in product/service design and market development.

The concept of logistics being the strategic driver of SCM for the purposes of meeting customer needs is similar to the IOLT definition and also at odds with Cooper, Lambert and Pagh as logistics strategically prevails over SCM. The LI also

provides a flow chart of logistics activities (Figure 2.2) to illustrate its definition and it also appears to apply to several organisations, similar to the IOLT.

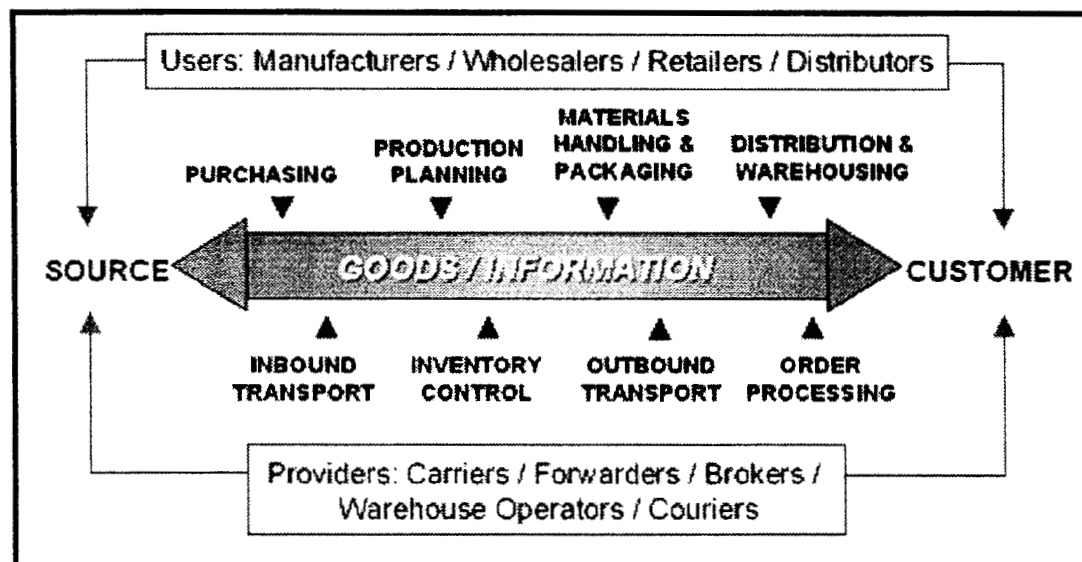


Figure 2.2: Logistics Institute Flow Chart

(Source: www.loginstitute.ca)

The terms ‘logistics’ and ‘supply chain management’ being used interchangeably in the practitioner and academic literature, or being ascribed different definitions, has led to confusion over their meanings and relationships. For example, Boitout (1997 p.33) provided three different meanings of SCM in one document whilst writing about SCM in grocery distribution: a “bringing together [of] cross functional teams to produce a holistic approach to help drive costs out and improve customer service” (p.12), an “activity that embraces both demand and supply to satisfy consumer needs” (p.28) and a “process from plough to plate”. Notwithstanding, all these meanings are similar to the CLM’s point-of-origin to point-of-consumption concept in its definition.

Skjøtt-Larsen (1999 p.41) argued SCM in the academic literature comprises many definitions and cited three different versions:

...an integrative philosophy to manage the total flow of a distribution channel from the supplier to the end user (from Cooper and Ellram 1993)... [that] equates SCM with the traditional logistics concept,

...the integration of business processes from end user through original suppliers that provides products, services and information (from Cooper, Lambert and Pagh 1997)... [that] is very broad in scope and

encompasses more and less [sic] general management and control of the firm, [and]

...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 (from Christopher 1998)... [that] focuses on the management of relationships and has a holistic view of the supply chain.

Skjøtt-Larsen adopted the third definition for his discussion of three different theoretical approaches to academic studies of SCM. He further argued SCM is a “new discipline without theoretical definitions and frameworks and generally accepted methodologies” (1999 p.41). However, if the concept of SCM is considered in either a logistics or marketing and channels of distribution contexts, then substantial research does exist. Skjøtt-Larsen called for a new paradigm in logistics research, but in his subsequent discussions and contribution about three theoretical approaches for academic study consisting of existing theories in Transaction Cost Analysis, Network Perspectives and Resource-based Management, he moved between logistics and SCM without further clarification. He also noted that SCM is “only implemented in relatively few companies in Europe, typically large, multinational companies” (1999 p.41). This view of SCM’s relevance is shared by Otto and Kotzab who argued “SCM will be primarily relevant to companies in long-linked industries, it will be relevant to companies with ample power to secure co-operation, dealing with perishable goods in multi-echelon chains and in high uncertainty environmental settings” (1999 p.12).

New (1997) wrote that conceptual boundaries of SCM are difficult to define due to “profound ambiguity” about the use of SCM and SC that ranges “from the perspective of an individual firm... to a particular product or item... to a handy synonym for purchasing, distribution and materials management” (p.16). Like Skjøtt-Larsen, New called for an extension of the domain, range of methodologies and scope of SCM and attendant research. While his arguments contributed to a social context of logistics, channels of distribution and SCM they also did not clarify the confusion surrounding definitions about SCM.

Cooper, Lambert and Pagh (1997 p.1), Lambert, Cooper and Pagh (1998 p.1), Lambert and Cooper (2000 p.65) and Lambert (2001 p.99) reported academia and academic research are “following rather than leading the discussion about SCM,” noting “consultants proposed the term and educators proposed structure and theory” for executing SCM. Their definition of SCM (1997 p.2, 1998 p.1, 2000 p.66), partially cited by Skjøtt-Larsen above, comes from The International Center for Competitive Excellence, now called The Global Supply Chain Forum and co-ordinated by Lambert:

Supply chain management is the integration of business processes from end user through original suppliers that provides products, services and information that add value for customers.

This definition introduces all business processes as part of SCM as opposed to only logistics activities and is thus an extension to the logistics process.

Lambert, Cooper and Pagh (1998), Lambert and Cooper (2000) and Lambert (2001) have argued that the confusion over logistics and SCM stems from the 1986 CLM definition representing “a supply chain orientation from point-of-origin to point-of-consumption” (1998 p.2, 2000 p.67, 2001 p.100). This representation blended the concept of logistics as a “functional silo within companies” with a “bigger concept that deals with the management of material and information flows across the supply chain... similar to the confusion over marketing as a concept and marketing as a functional area” (ibid.). The subsequent confusion led to a re-conceptualisation of both terms and the CLM’s amended 2001 definition that “explicitly declares CLM’s position that logistics management is only a part of SCM” (ibid.).

Logistics is now seen as a functional area within the broader strategic context of SCM, a “new and broad understanding of SCM seems to be emerging” and this emerging concept “follows a logical progression” (Cooper, Lambert and Pagh 1997 pp.4-5). A new framework for SCM consists of “three closely inter-related elements: the structure of the supply chain, the SCM business processes, and the SCM components” (Lambert, Cooper and Pagh 1998 p.4, Lambert and Cooper 2000 p.69,

Lambert 2001 p.103), and together with their definition of SCM “moves the SCM philosophy to its next evolutionary stage” (Lambert, Cooper and Pagh 1998 p.4).

Christopher shares this broader view in his definition (1998 p.18) that was the third definition cited and adopted by Skjøtt-Larsen:

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.

Christopher argued that while the concept of SCM is new it is “in fact no more than an extension of the logic of logistics. Logistics management is primarily concerned with optimizing flows within the organization whilst supply chain management recognizes that internal integration by itself is not sufficient” (1998 p.16). Ballou, Gilbert and Mukherjee concurred that “although SCM is a new term to describe the management of product-flow activities, the concept has been imbedded in physical distribution and logistics since the beginning of the 1960s ...what is new is the emphasis given to boundary-spanning management” (2000 p.17). Stank, Keller and Daugherty agreed with the latter statement that “integration extends beyond the firm to encompass channel participants” (2001 p.31). Their view is similar to Lambert, Cooper and Pagh’s discussion regarding functional silos in a firm and agrees with them that SCM prevails over logistics.

Christopher’s contribution to the SCM debate is that SC actors need to take a new approach to relationships in the marketing channel, which have tended to be adversarial, and develop a philosophy of co-operation and ‘win-win’ thinking in order to achieve a more profitable outcome for all parties in the channel (1997, 1998). He further noted that due to changing business environments discussed in section 2.3.1 individual firms no longer compete against each other, rather supply chains now compete against one another.

Mentzer (2000) and Mentzer, DeWitt, Keebler, Min, Nix, Smith and Zacharia (2001) have likewise argued that many firms are involved in the supply chain. Figure 2.3 delineates the supply chain and its actors to include not only suppliers and customers

but also financial providers, market researchers and third-party logistics (3PL) providers to a focal firm that is at the centre of any SCM analysis.

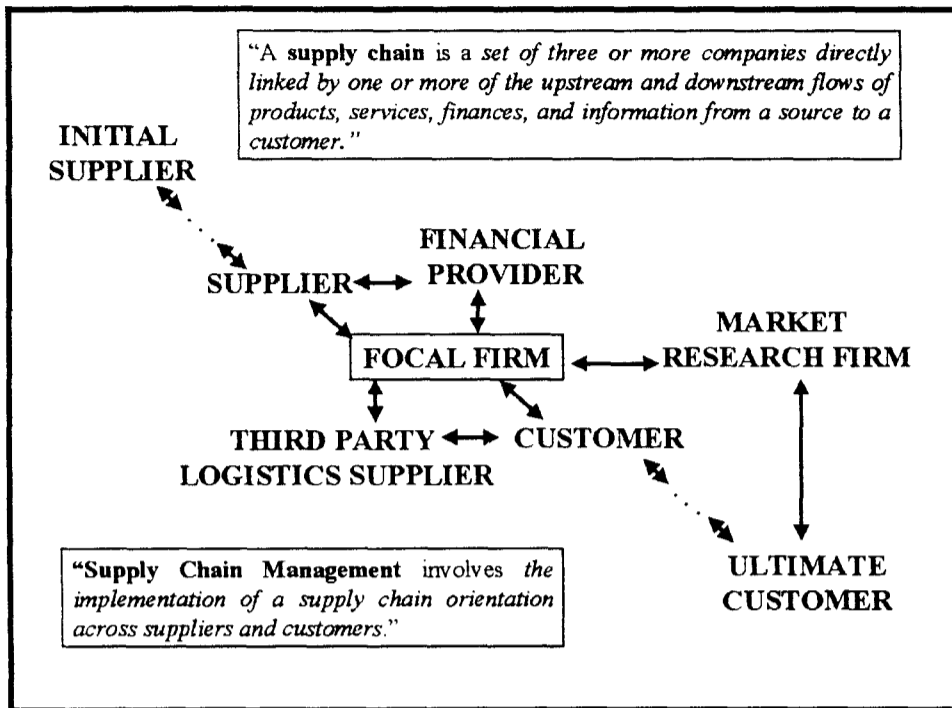


Figure 2.3: Mentzer's Supply Chain

(Source: Mentzer, DeWitt, Keebler, Min, Nix, Smith and Zacharia 2001 p.5)

There has been a call for this network of actors beyond customers and suppliers in a traditional and linear SC to be integrated and co-ordinated to increase performance and achieve goals of customer satisfaction (Christopher 1998, Lamming 1996, Kent and Flint 1997, Skjøtt-Larsen 1999, Stephens 1999, Mentzer 2000 and Mentzer, DeWitt, Keebler, Min, Nix, Smith and Zacharia 2001). Further, Christopher has also argued for a change in terminology from supply chain to supply network "since there will be multiple suppliers and, indeed, multiple suppliers to suppliers as well as multiple customers and customers' customers to be included in the total system" (1998 p.18).

2.2.3 Summary

The definition of logistics used for this study is the current CLM definition set out above. It discusses a process encompassing activities of transport, storage, inventory and production. These activities and their relevance to the study will be developed in subsequent sections. Whilst in the words of one academic (Grant 2001) there has been 'terminological torture' in the logistics and supply chain debate, a consensus has emerged that supply chains and supply chain management encompasses more

than logistics and logistics management. This extension goes beyond a dyadic encounter between customers and suppliers to include relationships among various actors within the supply chain. Nevertheless, the terms supply chain and supply chain management are reasonably new theoretical concepts. Frameworks are lacking as evidenced by the various definitions provided throughout this section. Indeed in some instances the terminology is confusing, as SCM has often been misused and little consistency has existed in its application (van der Vorst and Beulens 1999).

This study is concerned with dyadic encounters between customers and suppliers and any relevant relationships that emerge from these encounters. Thus, direct consideration of SC and SCM issues is not applicable to this study's primary focus but the discussion has been useful to consider the various definitions. The definitions of SCM provided in this section appear to be somewhat dissimilar to one another but are not significantly dissimilar from the CLM definition of logistics adopted for this study. Accordingly, for the purposes of this study, the supply chain will be considered synonymous with a channel of distribution and supply chain management will be considered synonymous with logistics management. However, it is important to note these issues in the context of the various debates, particularly as the historical development of supply chains and channels of distribution in the UK food processing industry may impact the dyadic encounters investigated. Any such impacts will be examined and discussed in Chapter Eight. The next section turns to the historical development of logistics and its context in the pursuit of business activities.

2.3 THE LOGISTICS DISCIPLINE

2.3.1 The Evolution of Logistics

This section discusses the development of logistics as a scholarly discipline and its evolution towards customer focus, interdisciplinary studies and integrative systems. Logistics is considered to be a discipline for this study from the definition of discipline in the *Collins Dictionary* as "a branch of learning or instruction" (1998 p.445). This definition reflects scholarly activity surrounding logistics, notwithstanding the views of some academics that the term discipline may not apply

(Bartels 1982, Grant 2001) and the view discussed in section 2.4 that logistics should be considered a part of the marketing discipline.

Although the concept of logistics has been in existence for centuries, particularly in a military context, its scholarly study began in agricultural or farm-to-market economics and physical distribution at the beginning of the last century (Lambert and Stock 1993, Kent and Flint 1997, Bartels 1988, Christopher 1998, Stock and Lambert 2001). Lambert and Stock (1993) and Stock and Lambert (2001) provided a chronology of logistics' development since 1901. They noted significant developments in logistics thought have only occurred since the early 1960s as a result of the introduction of the "marketing concept... as a new corporate philosophy" and "the concept of total cost analysis," the appearance in 1961 of "one of the first texts on logistics management," and the formation of "the Council of Logistics Management... in 1963" (1993 p.19, 2001 p.12). Langley concurred with this point of departure, citing an observation by Drucker in 1962 that "we know little more about distribution today than Napoleon's contemporaries knew about the interior of Africa ...we know it is there, and we know it is big, and that's about all" (1992 p.20). The relationship of logistics to the discipline of marketing will be discussed further in section 2.4.

Kent and Flint (1997) examined the evolution of logistics thought by interviewing seven academics in the U.S., Professors Donald Bowersox, John Coyle, Bernard La Londe, Douglas Lambert, John Langley, Tom Mentzer and James Stock. From these interviews they provided a chronology of major contributions through six different eras or themes they identified in their interview analyses:

- Era 1: Farm to Market (1916-1940),
- Era 2: Segmented Functions (1940 thru early 1960s),
- Era 3: Integrated Functions (early 1960s thru early 1970s),
- Era 4: Customer Focus (early 1970s thru mid-1980s),
- Era 5: Logistics as Differentiator (mid-1980s thru present), and
- Era 6: Behavioral and Boundary Spanning (the future) (1997 p.22).

During Kent and Flint's Era 1: Farm to Market and Era 2: Segmented Functions logistics was integrated with marketing and both were influenced by agricultural

economics until World War II (1997). The War saw concepts in logistics migrate into two sectors: military and business. Military needs for the War focussed on logistics activities pertaining to matériel while business logistics remained a sub-set of marketing. This view is a North American, and primarily U.S., perspective. The geographic and industrial considerations of this study warrant comment on the differences between the North American and UK situations in order to understand the different perspectives.

North America has significantly different logistics concerns due to its geography. It is a continent that is about 4,000 miles from east to west by about 1,800 miles from north to south, or an area of some 7 million square miles excluding Alaska and Mexico (Infoplease.com 2002, U.S. Department of State 2002). Population density in Canada is 8 people per square mile while in the lower 48 States population density is 86 people per square mile, for an aggregate of 43 people per square mile (ibid.). Population is concentrated in certain areas of Canada such as the Toronto-Montreal corridor, and the U.S. such as the eastern seaboard and California, thus there are vast areas with little or no population in both countries. Both countries were not truly settled until the early 1900s however development of transportation infrastructures enabled economic growth and distribution, beginning with transcontinental railroads in the mid-1800s and culminating with the U.S. interstate highway system in the 1950s.

By contrast, the UK consists of an area of 94,525 square miles and has a population of 59.6 million people for a population density of 631 people per square mile, including Northern Ireland (Infoplease.com 2002). Population settlement and re-settlement has gone on for centuries since before the Romans took up residence in the 1st century BC. Like North America, the UK saw an increase in urbanisation due to improvements in agricultural production during the early 1900s (Bartels 1988, Hall 1993, Kent and Flint 1997), however its situation during World War II was quite different.

The UK was more deeply involved with its land and production being disrupted by enemy air attack. After the War rationing of basic foodstuffs was common place until 1954, imported foods were either not available or only at premium prices, consumer expectations were low due to years of hardship, the UK distribution network was underdeveloped, and there were no truly national grocery retailing chains (Boitoult 1997, Patel, Sheldon, Woolven and Davey 2001). Thus, a 'production push' in the agriculture channel of distribution or supply chain was in effect in the UK until the 1960s (Boitoult 1997). This concept of a production push or SC push strategy will be further discussed in section 2.4.3 and Chapter Three.

Kent and Flint (1997) agreed with Lambert and Stock (1993), Stock and Lambert (2001) and Langley (1992) that a "distinction between the logistics domain and the overall body of knowledge... began in the 1960s" (p.16) as Era 3: Integrated Functions "was marked by a systems approach and total cost perspective" (p.24). The gaps in the development of North American and UK logistics systems began to close in the 1960s with this era. Stock and Lambert were interviewees of Kent and Flint, thus some convergence of views is expected. However, Kent and Flint's analysis was based on responses from all interviewees so it is reasonable to consider the resultant six eras represent cumulative views of the seven academics.

Era 4: Customer Focus noted that "customer service, of which physical distribution is a component, became a significant issue" in the 1970s and that "logistics itself became more prevalent in business scholarship overall" (1997 pp.24-25). One of the interviewees stated that "historically we talk about the customer in an operational sense" and that "we are naïve in looking at the behavioral reaction of the customer" (1997 pp.25-26). This observation, made in the mid-1990s, is still evident in some logistics customer service research as discussed in Chapter Three.

2.3.2 The Current State of Logistics

Era 5: Logistics as Differentiator represents the current state of logistics. This era saw logistics become "a key means of differentiation for the firm" (Kent and Flint 1997 p.25). The need for firms to differentiate themselves from their competitors

stems from increasing customer sophistication, products and markets becoming commoditised and thus perceived equally by customers, a decline in the impact of advertising, and an increase in price competition (Leeflang and van Raaij 1995, Christopher 1997, Younger 1997).

This era has also been marked by discontinuous changes in a firm's competitive environment (Kerin and Sethuraman 1999, Sheth and Sisodia 1999). Such changes include higher levels of business turbulence, proliferating product lines, the balance of distribution power shifting from manufacturers to retailers, increases in computerised data processing and the advent of the Internet, social and urban changes affecting demographics and consumer tastes and preferences, and globalisation of markets and logistics activities (Sharman 1992, Hall 1993, Dawson 1995, Leeflang and van Raaij 1995, Lancioni 2000).

These changes in a firm's environment mean individual logistics systems, designed in the 1960s and early 1970s in functional and linear ways, no longer work (Sharman 1992) and thus disintermediation and reintermediation may have to occur in supply chains (Kerin and Sethuraman 1999, Sheth and Sisodia 1999, McAllister 2000). Competitive advantage gained through an integrated approach to logistics has been suggested as a means to achieve differentiation (Sharman 1992, Christopher 1998). Integration of logistics activities and systems enables firms to achieve increased leverage and increased profitability from their logistics systems and supply chains (Shapiro 1992, Sharman 1992). The selection of a firm's competitive focus through either product innovation, customer service or cost leadership will determine its logistics system and supply chain requirements (Shapiro 1992, Porter 1985).

An increase in logistics scholarship since 1960 is also demonstrated by a proliferation of related academic journals. Two transportation-specific academic journals were launched during Era 3, *Transportation Journal* (TJ) in 1961 and *Logistics and Transportation Review* (LTR) in 1964 (Kent and Flint 1997). Although both have remained primarily transportation-orientated they have featured articles and commentary on other logistics functions throughout their existence.

Two logistics academic journals were launched during Era 4, *The International Journal of Physical Distribution & Logistics Management* (IJDLM) in 1970 (originally called *The International Journal of Physical Distribution & Materials Management*) and *The Journal of Business Logistics* (JBL) in 1978 (Kent and Flint 1997). These four journals have been mainstays of logistics research and were subject to a review of users to determine which journal criteria were important and which journals were best in terms of these criteria (Emmelhainz and Stock 1989).

Relevance, quality and understandability were the three most important criteria and JBL, IJDLM, TJ and the *Harvard Business Review* (HBR) rated consistently higher than other journals in terms of the first two criteria (ibid.). Four journals were launched during Era 5, *Logistics Information Management* (LIM) in 1988, *The International Journal of Logistics Management* (IJLM) in 1990, *Supply Chain Management: An International Journal* (SCM) in 1996 (originally called *Supply Chain Management*) and the *International Journal of Logistics: Research and Applications* (IJLRA) in 1998 (Kent and Flint 1997).

Recent surveys by Gibson, Hanna and Menachof (2001) have yielded 104 journals or periodicals that are important to and being used by logistics academics. However they recognise that many of these periodicals are regional and practitioner publications. The journals ranked by North American and European academics as being the 'best' on a composite basis of research, teaching and outreach usefulness were, in alphabetical order, HBR, IJLM, IJDLM and JBL (ibid.). Whilst the number of academic journals does not necessarily reflect the quality or maturity of a discipline, it does indicate an increasing interest in it and its scholarship. Based on these findings, academics writing in logistics journals can make contributions by "undertaking research that is relevant to both academics and practitioners and combines theoretical and pragmatic aspects of the topics under investigation" (Emmelhainz and Stock 1989 p.45). They can also satisfy their own requirements for research and teaching excellence pursuant to such initiatives as, respectively, the

Research Assessment Exercise (RAE) and Quality Assurance Assessment (QAA) in the UK (Gibson, Hanna and Menachof 2001).

2.3.3 Future Issues in Logistics

Kent and Flint's Era 6: Behavioral and Boundary Spanning considers the future of logistics and important future issues based on their interviews. However, whilst Kent and Flint's article (1997) and the texts by Lambert and Stock (1993) and Stock and Lambert (2001) contribute to our knowledge about the development and history of logistics, they are all focussed on North America. Interviews were held with three UK logistics academics (Grant 2001), Professors Peter Hines and Richard Lamming and Dr Richard Wilding, to investigate a UK and European context for this study and to extend Kent and Flint's work (see Appendix One for the Academic Semi-Structured Interview Schedule). These interviews were conducted at a practitioner conference and thus do not include other UK and European academics that have made significant contributions in logistics. However, insights from these interviews combined with articles by other academic and practitioner authors in North America and UK/Europe on future issues in logistics and SCM, support and supplement Kent and Flint's findings.

Following on from these interviews, a list of challenges requiring research was compiled by content analysis of key terms and topics in various articles and is shown as Table 2.1. Information Technology including Virtual Logistics or E-Commerce was noted in 15 articles, followed by Integrated Supply Chains and SCM (13 articles) and Customer Service (12 articles). The importance attached to customer service as an ongoing and relevant issue for research is discussed further in the context of this study in Chapter Three.

Topic	Authors
Customer Service	Van der Hoop 1992, Fuller, O'Connor and Rawlinson 1993, Lynch, Imada and Bookbinder 1994, McGinnis, Boltic and Kochunny 1994, P-E Consulting 1996, Younger 1997, Lambert, Cooper and Pagh 1998, Hale 1999, Seirsen 1999, Bowersox, Closs and Stank 2000, Lambert and Cooper 2000, Grant 2001
Forecasting including Collaborative Planning, Forecasting and Replenishment (CPFR) and Efficient Consumer Response (ECR)	Dawson 1995, Mathews 1997b, Lambert, Cooper and Pagh 1998, Bowersox, Closs and Stank 2000, Lambert and Cooper 2000, Grant 2001
Globalisation or International or Pan-European Logistics	Hall 1993, Lynch, Imada and Bookbinder 1994, McGinnis, Boltic and Kochunny 1994, Dawson 1995, P-E Consulting 1996, Skjøtt-Larsen 2000
Green or Reverse Logistics	Lynch, Imada and Bookbinder 1994, P-E Consulting 1996, Skjøtt-Larsen 2000
Human Resources including Training and Education	Hale 1999, Bowersox, Closs and Stank 2000, Grant 2001
Information Technology including Virtual Logistics or E-Commerce	Hall 1993, Lynch, Imada and Bookbinder 1994, Chow and Heaver 1995, Dawson 1995, Davies 1995, Lamey 1996, P-E Consulting 1996, Mathews 1997a, Younger 1997, Hale 1999, Seirsen 1999, Skjøtt-Larsen 2000, Smith 1999, Bowersox, Closs and Stank 2000, Wilding 2001
Integrated Supply Chains and SCM	Van der Hoop 1992, Wilsher 1993, Lynch, Imada and Bookbinder 1994, La Londe and Masters 1994, Chow and Heaver 1995, Lamey 1996, Kent and Flint 1997, Lambert, Cooper and Pagh 1998, Seirsen 1999, Skjøtt-Larsen 2000, Bowersox, Closs and Stank 2000, Lambert and Cooper 2000, Grant 2001
Interfunctional or Interdisciplinary Integration	Van der Hoop 1992, Mathews 1997a, Hale 1999
Logistics Operational Activities including Warehousing, Inventory, and Transportation	McGinnis, Boltic and Kochunny 1994, P-E Consulting 1996, Younger 1997, Lambert, Cooper and Pagh 1998, Lambert and Cooper 2000
Supply Chain Partnerships or Relationships	Wilsher 1993, Lamey 1996, Skjøtt-Larsen 2000, Bowersox, Closs and Stank 2000, Grant 2001
Logistics Theory Building	Kent and Flint 1997, Lambert, Cooper and Pagh 1998, Lambert and Cooper 2000, Grant 2001
Third-Party Logistics (3PL) and Outsourcing	Van der Hoop 1992, Lynch, Imada and Bookbinder 1994, P-E Consulting 1996, Mathews 1997a, Seirsen 1999
Value Addition including Economic Value Added (EVA)	Wilsher 1993, Lambert, Cooper and Pagh 1998, Christopher and Ryals 1999, Bowersox, Closs and Stank 2000, Lambert and Cooper 2000

Table 2.1: Important Future Challenges in Logistics

2.3.4 Summary

Concepts of logistics have been studied for over 100 years, however specific study of the discipline has only really occurred during the last 40 years. Thus, the discipline is still quite young in academic terms and is still finding its way in terms of definitions, maturity and research agendas. One such agenda, customer service, has only been considered for about 25 years. However, customer service continues to be an important area for academics and practitioners in logistics and SCM. Customer service suggests a marketing context and the debate between logistics and SCM

shares terms from marketing such as channels of distribution and physical distribution. The next section explores these discussions by considering marketing and its relationship to logistics.

2.4 MARKETING AND LOGISTICS

2.4.1 The Evolution of the Marketing Concept

This section contains a discussion of the relationship between the marketing and logistics disciplines and begins with the evolution of the marketing concept. Bartels argued that marketing has existed as a “percept or a verb for all of recorded history” however the consideration of marketing as a concept only came about at the turn of the last century (1988 p.3). This changing view of marketing as a concept and as a scholarly discipline resulted from rapidly changing economic and human conditions at the end of the nineteenth century. Prior to that time, much of society’s activity was directed at providing goods to enable the vast majority to live above a subsistence level. But, the expansion of industrial production, the development of new products through invention, and increases in population, urbanisation and personal income all contributed to emerging thoughts about marketing in a business context.

The American Marketing Association defines marketing as “the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods, and services to create exchanges that satisfy individual and organizational objectives” (Harris and Stock 1985 p.48, Kotler 2000 p.8). This definition incorporates what has been termed the marketing concept, as opposed to marketing as an intellectual concept. The marketing concept was defined by Kotler as “the key to achieving its organizational goals consists of a firm being more effective than competitors in creating, delivering, and communicating customer value to its chosen target markets” (2000 p.19).

Prior to the marketing concept there were the production era from the mid-1800s until the 1930s and the sales era until the 1960s (Keith 1960, Kotler 2000). The production era was based on manufacturing and supplying more products in an

efficient manner and was fostered by the technical advances of the Industrial Revolution; Drucker (1993) termed this a 'productivity revolution.' Technical advances were enhanced by concepts of management science in the work place developed by Taylor with his time-and-motion studies in the early 1900s (Bartels 1988).

The productivity gains from 'Taylorism' are best demonstrated by Ford's development of the automobile production line to build the Model T in the 1920s. Ford was quoted as saying any customer could have a Model T in any colour they liked as long as it was black (Jobber 2001). The concepts of 'Taylorism' and 'Fordism' are thus remembered for not being particularly customer-orientated, although some authors consider this somewhat unfair as greater customer satisfaction was achieved through increased product availability at cheaper prices to more market segments (Drucker 1993, Jobber 2001).

During the sales era firms became more conscious of customers as demand had to be created for increasing numbers of products available in the marketplace during the Great Depression (Keith 1960, Bartels 1988, Drucker 1993). Kotler argued the resultant selling concept in this era "holds that customers will ordinarily not buy enough" of a firm's products, thus firms must "undertake aggressive selling and promotion efforts" (2000 p.18). The selling concept does not consider whether customers need or want these products or what happens to excess production from production overcapacity, except when firms suffer from dissatisfied customers "bad-mouthing the product to 10 or more acquaintances" (Kotler 2000 p.19).

Shortcomings of the selling concept were recognised by consumers and marketing academics, e.g. Cox, Alderson and McCarthy (Bartels 1988). These and other academics influenced the development of a marketing concept throughout the 1950s that culminated in Levitt's classic 1960 article "Marketing Myopia" in HBR. Levitt argued that "selling focuses on the needs of the seller, marketing on the needs of the buyer" and that marketing is preoccupied with "satisfying needs of the customer by means of the product and the whole cluster of things associated with creating,

delivering and finally consuming it” (1960 p.50). Thus, the marketing concept moved forward and the subsequent change in focus led to the AMA definition cited above as well as other propositions:

Marketing is – the process whereby society, to supply its consumption needs, evolves distributive systems composed of participants, who, interacting under constraints – technical (economic) and ethical (social) – creates the transactions or flows which resolve market separations and result in exchange and consumption (Bartels 1968 p.32),

Marketing is the process in a society by which the demand structure for economic goods and services is anticipated or enlarged and satisfied through the conception, promotion, exchange, and physical distribution of such goods and services (Marketing Staff of the Ohio State University 1965 p.43), and

Marketing achieves company goals by meeting and exceeding customer needs better than the competition (Jobber 2001 p.23).

Thus, understanding customer needs and fulfilling them has been central to marketing thought and practices since the 1960s. This theme of properly servicing customer needs is also applicable to logistics and the next section discusses marketing channels of distribution as they relate to the origins of the marketing and logistics relationship.

2.4.2 Marketing Channels of Distribution

Initially, logistics and marketing were linked. Early enquiry in marketing was related to distributive trade practices due in part to the increasing significance of ‘middlemen’ who were performing more functions between producers and consumers (Bartels 1988). The operative instrument for these ‘middlemen’ or intermediaries was the channel of distribution. Logistics activities as part of a process therefore take place within channels.

The channel of distribution was defined in section 2.2.2; but has also been defined as a “collection of organization units which performs the functions involved in product marketing” (Lambert and Stock 1993 p.72) and as “the means by which products are

moved from the producer to the ultimate consumer” (Jobber 2001 p.548). These definitions set out channels as a mechanism or fixed path for distribution of goods.

Channels may take several forms but all, save a direct channel from the primary producer to the end-consumer, incorporate one or more vertically-aligned intermediaries that assist in the distribution function or any associated logistics activities (Lambert and Stock 1993). Intermediaries include other product processors, sales agents, brokers, wholesalers, retailers, and associated logistics service providers.

The concept of channels has received considerable attention since the early 1900s by academics, e.g. Breyer, Bucklin, Mallen, Stern, El-Ansary and Rosenbloom (Bartels 1988, Lambert and Stock 1993, Kotler 2000, Jobber 2001). Most of this work focuses on the structures, networks and systems within the entire channel and is not directly applicable to the dyadic exchange considered in this study. However, Achrol, Reve and Stern argued “the fundamental activity in marketing channels is the transaction, i.e., the act of exchange between two economic agents... that compels a dyadic perspective in which the relationship between the two transacting parties is highlighted” (1983 p.56). This does not mean the study of networks and systems in channels does not affect or is not related to dyadic research. But, in order to study networks “first one needs to understand the basic transaction or acts of exchange between pairs of social actors by applying a dyadic interaction model” (ibid.). The environment proposed by them for doing so is illustrated in Figure 2.4 and forms one basis for this study.

Contributions of channel research applicable to this study relate to Bucklin’s ideas about channel outputs:

Time, place, and ownership utilities are services,
Service outputs are identified as holding till time of delivery,
determination of desirable lot size, and decentralization of the market
by delivery to a distant point,
The channel represents a combination of these services,
Variations in channel service are determined by processes of
substitution, and

Cost is a focal factor in channel construction and specialization (Bartels 1988 p.204).

These ideas feature in the dyadic exchange of this study in terms of the utility logistics provides for customers and the classification of logistics activities as services, and will be discussed where appropriate in later sections. Bucklin's work considers channels as economic systems, however channels have also been considered as social systems by Mallen and others in terms of distributive politics, countervailing power and pluralistic competition (Bartels 1988). Channels of distribution considered as social systems do not feature in this study and thus no further comment is provided here.

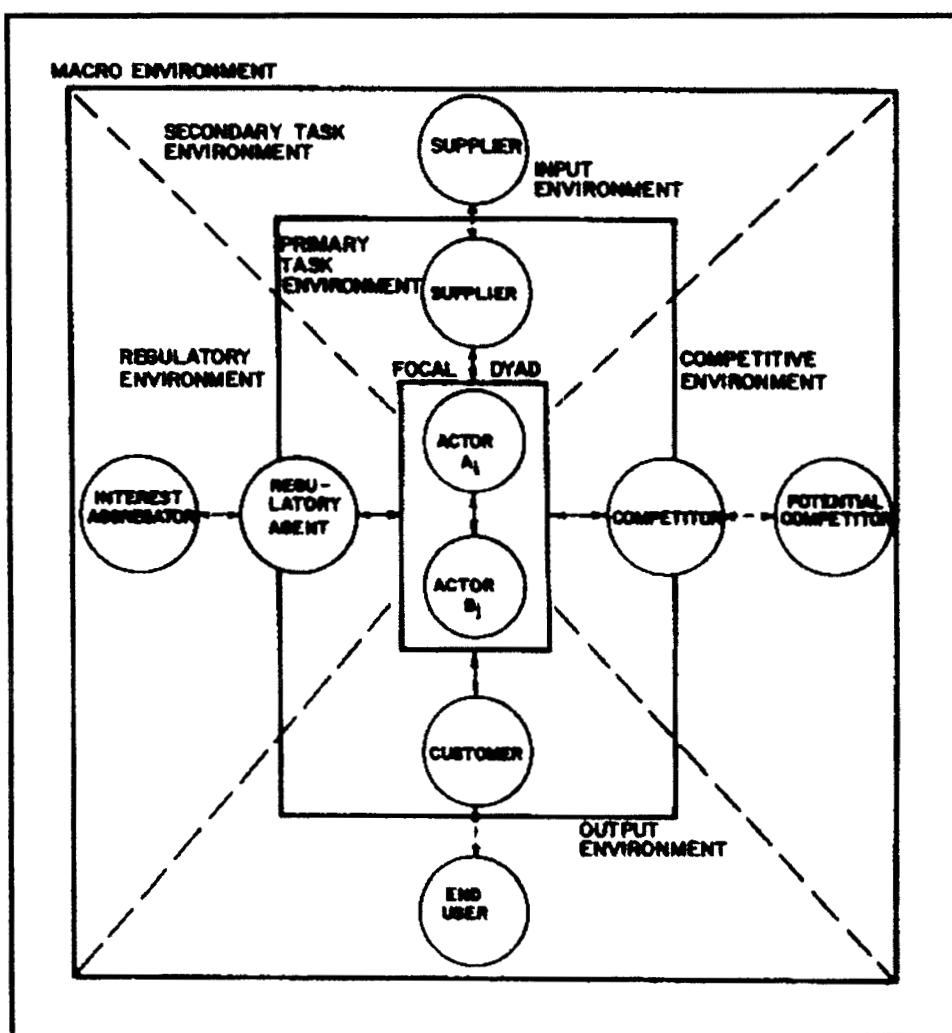


Figure 2.4: The Environment of Marketing Channel Dyads

(Source: Achrol, Reve and Stern 1983 p.58)

2.4.3 In the Beginning: Logistics and Marketing

Returning to the early history of logistics and marketing, one early contributor was Shaw who published *Some Problems in Market Distribution* in 1915 (Harris and Stock 1985, Bartels 1988, Christopher 1986, Christopher 1998). Shaw argued there

were only three divisions in business: production that changes the form of materials into commodities, distribution that changes place and ownership of the commodities produced, and facilitation or administrative functions, such as financing, purchasing, employment and accounting, that aid and supplement production and distribution (Harris and Stock 1985, Bartels 1988). He considered these divisions were in “motion of one sort or another” and, generalising this concept, “conceived marketing as ‘matter in motion’” (Bartels 1988 p.144). This is consistent with the view that logistics represents a process.

Shaw also argued that “the physical distribution of the goods is a problem distinct from the creation of demand... not a few worthy failures in distribution campaigns have been due to a lack of co-ordination between demand creation and physical supply... instead of being a subsequent problem, this question of supply must be met and answered before the work of distribution begins” (Christopher 1986 p.2, Christopher 1998 p.4). Shaw further proposed that the purpose of distribution was “to bring about an effective adjustment between demand creation and economical supply, to arouse the desired maximum of demand at a minimum of expense, and to supply without leakage the largest possible percentage of this demand” (Bartels 1988 p.168). Shaw therefore viewed distribution or logistics as a process or bridge between demand creation and physical supply. This relates to the marketing concept where producing firms must understand customer needs and thus demand before attempting to meet them by providing or supplying the goods to do so.

Butler and Swinney argued in their 1918 book *Modern Business: Marketing and Merchandising* that the form of distribution taken depends upon the economic strength of its institutions (Harris and Stock 1985). This argument is one of the first regarding power associated with certain firms and actors in a channel of distribution. Butler and Swinney also considered marketing was that part of distribution concerned with problems of a producer while merchandising referred to that part focused on problems of a jobber/dealer (ibid.). The former consideration is one of the earliest regarding a push strategy whereby manufacturers and producers utilise “sales

force and trade promotion to induce intermediaries [such as jobbers/dealers] to carry, promote and sell” products to consumers (Kotler 2000 p.567).

Other early contributors developed concepts of marketing from the study of agricultural and farm goods due to their continuing influence in economic activity at that time. Weld published *The Marketing of Farm Products* in 1916 (Harris and Stock 1985, Bartels 1988). Weld likewise considered marketing as part of the production activity and developed the concept of middleman specialisation that includes functions still prevalent today such as assembling, storing, risk bearing, financing, rearrangement, selling and transporting (Bartels 1988). Duncan was one of the first market researchers and wrote *Commercial Research* in 1919 (Bartels 1988). Duncan also analysed both agricultural raw materials and foodstuffs, and manufactured products, in his 1920 book *Marketing: Its Problems and Methods* and believed a combination of functional, institutional and commodity approaches produced the best scientific analysis for commercial and marketing problems (Bartels 1988). The notion of commodities will be discussed in terms of food processing in Chapter Eight.

These early contributors, as well as Converse, who distinguished between firm-specific functions and abstract functions of marketing in general, and Cherington, who defined marketing as a science consisting of activities that were distinct for producers and consumers, synthesised ideas and concepts that allowed the progression of scholarly study in marketing (Harris and Stock 1985, Bartels 1988). However, at this early point and throughout the Great Depression and war years the concepts of distribution and marketing continued to be integrated. It was only in the late 1950s and early 1960s that distribution or logistics began to be separated from marketing by academics and practitioners as the marketing concept gestated (Harris and Stock 1985, Bartels 1982, 1988, Voorhees and Coppett 1992).

2.4.4 The Disintegration of Marketing and Logistics

Bartels noted that “throughout its seventy-five year history, marketing has been the discipline concerned with the distribution of products and services, dealing with all

phases of the process” (1982 p.3). But a disintegration or segregation of marketing and distribution began in the 1960s with “the former consisting of negotiatory functions, the latter of functions of physical supply and distribution” (ibid.).

Reasons given for this disintegration of marketing and distribution include:

1. conceptual voids in the structure of marketing thought regarding distribution functions, institutions and activities (Bartels 1982),
2. incomplete consideration of systems analysis and distribution costs outwith or between individual firms and intermediaries by marketing academics, which was then picked up by emerging distribution academics (Bartels 1982, 1988, Voorhees and Coppett 1992),
3. confusion over which customer utilities marketing creates as opposed to utilities created by distribution, for example marketers have conceptually dealt with inventory as a storage function whereby distributors have thought inventory provides an availability utility (Bartels 1982),
4. the adoption of the marketing concept by firms and the subsequent restructuring of marketing department in firms that ignored the distribution function (Harris and Stock 1985), and
5. the neglect of distribution by marketers focussing on creating and satisfying new consumer demands using only three marketing mix variables of product, price and promotion, again leaving place or distribution to logisticians (Bartels 1982, Harris and Stock 1985, Voorhees and Coppett 1992).

These bases for disintegration or separation coincided with Kent and Flint’s third era.

However, the logistics discipline was not completely divorced from its marketing roots. Bartels commented that “physical distribution or logistics was regarded as inclusive of traditional marketing channels but independent of them” (1988 p.216). This independence from marketing channels and activities is demonstrated in Figure 2.5. According to Lambert and Stock (1993) and Stock and Lambert (2001) logistics activities are illustrated as sub-functions within the ‘place’ variable of the four marketing mix variables developed by McCarthy (collectively known as the ‘Four Ps’). Further, Svensson (2002) has argued that the theoretical foundation of SCM is related to Alderson’s functionalist theory of marketing

And so, the two objectives given for marketing and logistics in Figure 2.5 are close to Shaw's purpose of distribution presented above that was written over 85 years ago. To wit, the marketing objective of allocating scarce resources to the marketing mix variables ("bring about an effective adjustment between demand creation and economical supply...") to maximise long-term profitability ("to supply without leakage the largest possible percentage of this demand...") coupled with the logistics objective of minimising total logistics costs while meeting customer service ("arouse the desired maximum of demand at a minimum of expense...") suggest that logistics and marketing activities were, and still are, very much related and dependent upon each other (Bartels 1988 p.168).

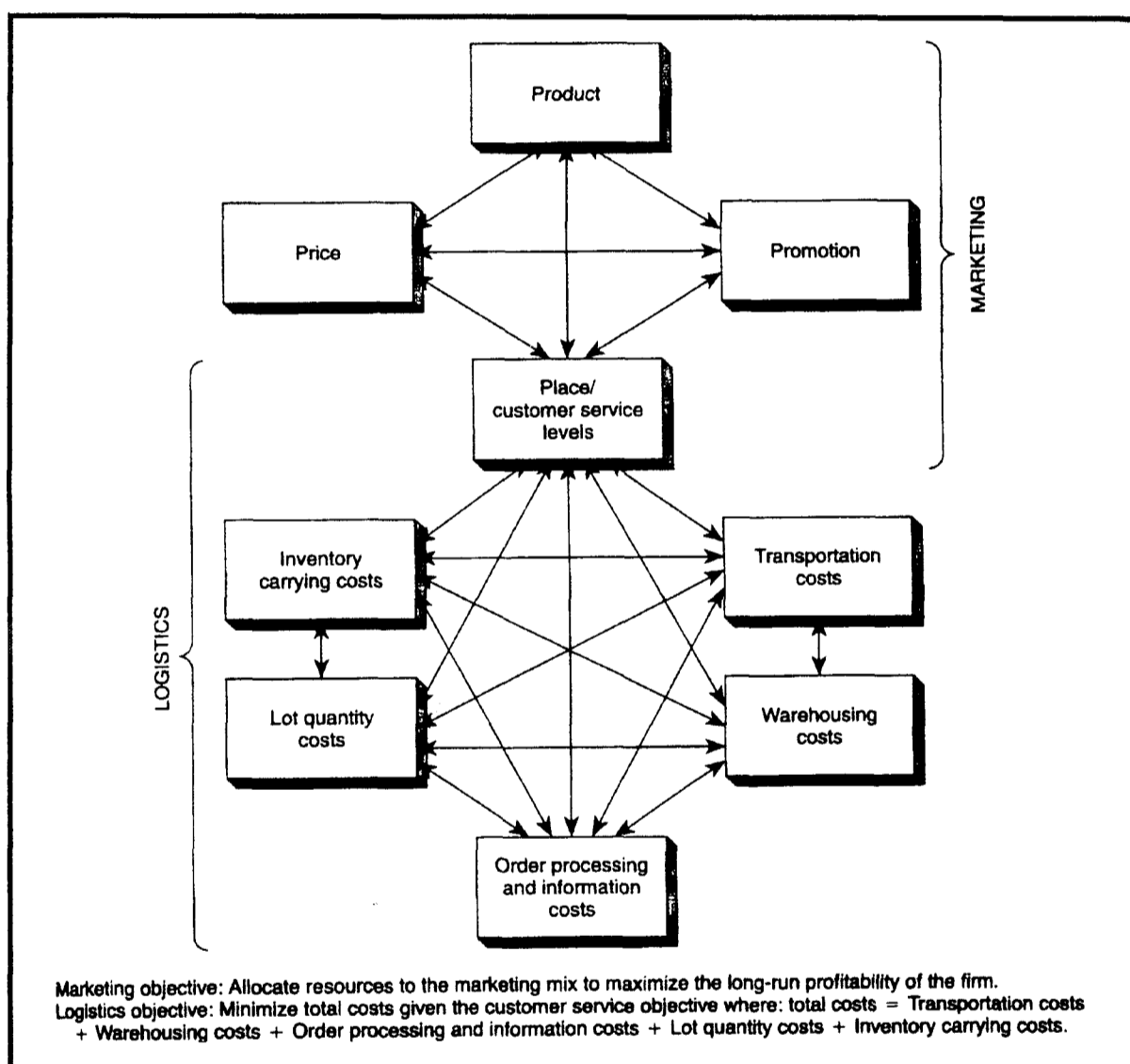


Figure 2.5: Relationship of Logistics to Marketing

(Source: Lambert and Stock 1993 p.42, Stock and Lambert 2001 p.97)

Whilst marketers may have continued independent of distribution and logistics, Bartels noted that independent logistics study in the 1960s and 1970s contributed the following to the marketing discipline:

Recognition was given to a substantive area of marketing which had been relatively neglected, namely physical distribution, including the general functions of transportation and storage.

Identification of the numerous activities comprised in physical distribution, scalable and measurable variables were made available for theoretical analysis.

Concepts and methods from disciplines other than the social and behavioral were employed in determining such relationships as are essential to the development of theory.

Understanding of physical or economic systems of marketing, in contrast to its social systems, was increased. Attention was focused upon activities peculiar to the marketing of economic good and the development of strategies not readily transferable to promotion of the programs of nonprofit institutions.

The concept of 'customer service' in terms of measurable physical performance was added as a key element of the marketing concept.

That is, the marketing concept was broadened to include physical support performance of the product or service (1988 p.218).

Logistics or distribution should therefore be considered with marketing in terms of theoretical progress and applications due to its strong historical linkages and conceptual developments. This proposition was re-introduced in the 1970s and 1980s as academics began to call for a reintegration of logistics in the marketing arena. This was coincident with Kent and Flint's fourth and fifth eras (1997) and is described in the next section.

2.4.5 The Reintegration of Marketing and Logistics

The reintegration process began in the 1970s with the writings of academics and practitioners, and changing trends in environmental forces (Harris and Stock 1985). The effective integration of marketing and logistics was seen to be more than simply a chapter on physical distribution in a marketing text. Indeed the "integration of marketing and distribution theory into a more general theory [was] essential not only to the solution of problems of the firm, but also to other problems of the world... (Bartels 1982 p.8) thus "differences which are argued between 'marketing' and 'distribution' pale in the face of the potentialities of an integrated body of thought and practice... (Bartels 1982 p.10, Harris and Stock 1985 p.62), and "there [was] no need for 'Marketing' to appear under another name" (Harris and Stock 1985 p.62). Whilst articles on distribution began appearing in HBR and the Journal of Marketing

most writings appeared in the distribution and logistics textbooks and journals introduced during this period.

A rediscovery of logistics within the marketing discipline also stemmed from the need to focus on customers in a changing environment (Sharman 1992) that would enable firms to obtain additional business and profits from leveraging their distribution operations (Shapiro 1992). Trends affecting logistics in the business environment listed at that time by Sharman (1992) included:

1. contracting product life cycles and proliferating product lines,
2. changes in the balance of power from producers to retailers and other intermediaries further downstream in the channel or supply chain,
3. increasing logistics costs as a percentage of the sales value of products due to decreasing manufacturing costs,
4. increasing globalisation that made channels and distribution more complex, and
5. opportunities to utilise new low-cost, high-volume data processing and transmission technology to increase firm response time and flexibility.

Thus, many trends surrounded the resurgence of the integration of logistics activities into an integrated logistics system, as well as the integration of logistics with its original parent discipline of marketing. Customer service in logistics was seen to be a major issue from the 1970s onwards. The specific linkage of logistics to marketing and its role in the marketing process and concept follows in the next section.

2.4.6 The Role of Logistics in Marketing

The essence of marketing has been presented as the marshalling of a firm's resources to meet customer needs. Implicit in the concept of customer needs is the concept of the benefits a customer will receive for the goods or services purchased, and the costs or sacrifice related to the purchase. The ratio between such benefits and costs has been presented as customer value (Christopher 1998, Kotler 2000, Jobber 2001). The study of value dates back to the classical economic views of Adam Smith (Smith 1993, Brewer 2001). Smith (1993) proposed that some goods may have value in use

but little value in exchange, e.g. water, whilst other goods may have value in exchange but little value in use, e.g. diamonds.

However, Brewer has argued that among “organizations in most industry sectors, including transport and distribution... there is still little agreement about what ‘value’ means and even less about how to create it. Moreover, value as a notion remains abstract and falls short on the specifics of measurement or assessment” (2001 p.127). She noted many different terms related to the concept of value: added value, value added, value analysis, customer value, value proposition, shareholder value, value creation and relationship value. Brewer concluded “value management rests on the premise that all stakeholders engaged in the relationship bring unique commitments to it, requiring a process of integration” (2001 p.137). This implies value is an individual construct for each stakeholder, and a managerial implication is that firms need to understand these individual constructs in order to understand and fulfil customer needs.

Lambert and Stock (1993) and Stock and Lambert (2001) considered value to be equivalent to the utility received by customers, where utility is an economic term representing “the ability of a commodity to satisfy human wants” or “the amount of such satisfaction” (*Collins Dictionary* 1998 p.1678). They cited Weld’s contention in *The Marketing of Farm Products* that logistics activities provided place and time utility, i.e., products in the right place through movement and at the right time through availability, whilst manufacturing provided form utility of goods through making tangible products from raw materials and other marketing activities such as credit and quantity discounts provided possession utility (Lambert and Stock 1993, Stock and Lambert 2001).

They concluded that time, place and possession utilities provided added value beyond basic product manufacturing. This value-added concept beyond the core product has been presented in a marketing context (Christopher 1992, Christopher and Yallop 1992, Christopher 1998, Kotler 2000) in terms of benefit offerings over several ‘product levels’ as shown in Figure 2.6. It is also similar to the outputs

provided by channels of distribution. The core product, termed ‘tangibles,’ is fundamentally what a customer is buying in terms of basic materials and features. The expected, augmented and potential products, termed ‘intangibles,’ all represent additional features or services meant to enhance and broaden the basic offering in an effort to exceed customer expectations. Logistics activities are usually not part of the core product and thus feature in the other categories of product levels. Kotler cited Levitt in noting that “the new competition is not between what companies produce in their factories, but between what they add to their factory output in the form of packaging, services, advertising, customer advice, financing, delivery arrangements, warehousing, and other things people value” (2000 p.395). This statement by Levitt provides convergence with previous discussions about time, place and possession utility in this section, and supply chains competing with one another.

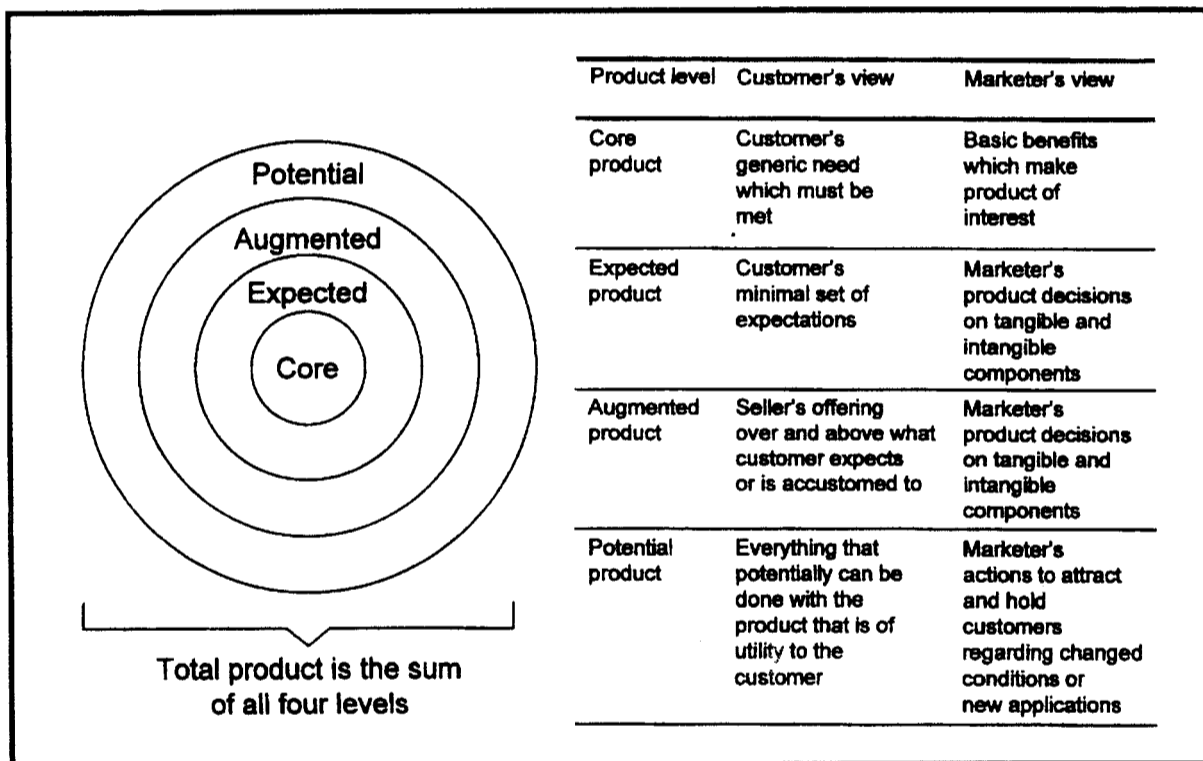


Figure 2.6: Product Levels

(Sources: Christopher 1992 p.7, Christopher, Payne and Ballantyne 1991 p.59, Christopher and Yallop 1992 p.195, Christopher 1998 p.44, Kotler 2000 p.395)

The notion that logistics activities are intangible suggests they are services in the product-services debate ongoing in the marketing discipline. In a larger economic and industrial context, services are considered important as they now comprise almost 75% of employment and gross domestic product in most western industrialised countries including the U.S., Canada, the UK, and most European nations (Miles 1993, Christopher 1998, Kotler 2000, Jobber 2001, Verma 2001).

This dramatic shift towards service-based or tertiary-sector economies over the last thirty years has been categorised as 'post-industrial' or 'post-capitalist' and society is now seen to be based on 'information' or 'knowledge' or 'experience' (Drucker 1993, Miles 1993, Pine and Gilmore 1998, Verma 2001). Thus, understanding, researching and managing service activities are important in this changed business environment (Miles 1993, Verma 2001).

Zeithaml, Parasuraman and Berry (1985), Hoffman and Bateson (1997) and Verma (2001) have all discussed the distinct challenges of marketing services versus products within the overall marketing mix category of product. Hoffman and Bateson provided the following four important characteristics that distinguish services from goods:

- intangibility as services cannot be seen, smelt, felt, tasted or otherwise sensed similar to goods,
- inseparability of production and consumption as most services involve the customer in the production function,
- heterogeneity or inconsistency of the service from the perspective of the service delivery and customer experience, and
- perishability of the service if it is not consumed at the moment in time it takes place, i.e., the service cannot be inventoried (1997 p.43).

Primary logistics activities involve transportation, warehousing, inventory and order processing and usually do not physically transform or affect products. Logistics activities can certainly be heterogeneous, e.g. order cycle time variability and consistency, and are also intangible, e.g. the storage or delivery of a good, and perishable, e.g. a lorry leaving on its delivery route. What is less clear is how inseparable logistics activities are as regards the customer. The customer is involved in the ordering and receiving stages but is relatively passive throughout the provision of the logistics activities, provided the variability is within accepted bounds.

Nevertheless, logistics activities generally encompass the above characteristics and the classification of a service, i.e. benefits received by a customer such as time, place and possession utilities are provided by way of service or enhanced product offerings from logistics activities rather than from attributes of the basic or core product.

Consideration of logistics activities as services brings convergence to Bucklin’s conception of channel outputs and the foregoing discussions about utilities. Thus, research into logistics activities in their marketing context would be well served by the use of evaluation and analysis concepts and tools from the services and services marketing area.

Min and Mentzer (2000) developed an integrative model to outline the role of marketing in SCM. Their model, shown in Figure 2.7, suggests a “cause-and-effect relationship among several important concepts in business research and practice: the marketing concept, a market orientation, relationship marketing and SCM” (2000 p.782). These relationships were proposed as ‘univocal’ and were argued to lead to a differential advantage for firms in the supply chain. Min and Mentzer did not empirically test the model, but suggested future research should do so. A deconstruction of their model is required to understand its relevance and implications for this study.

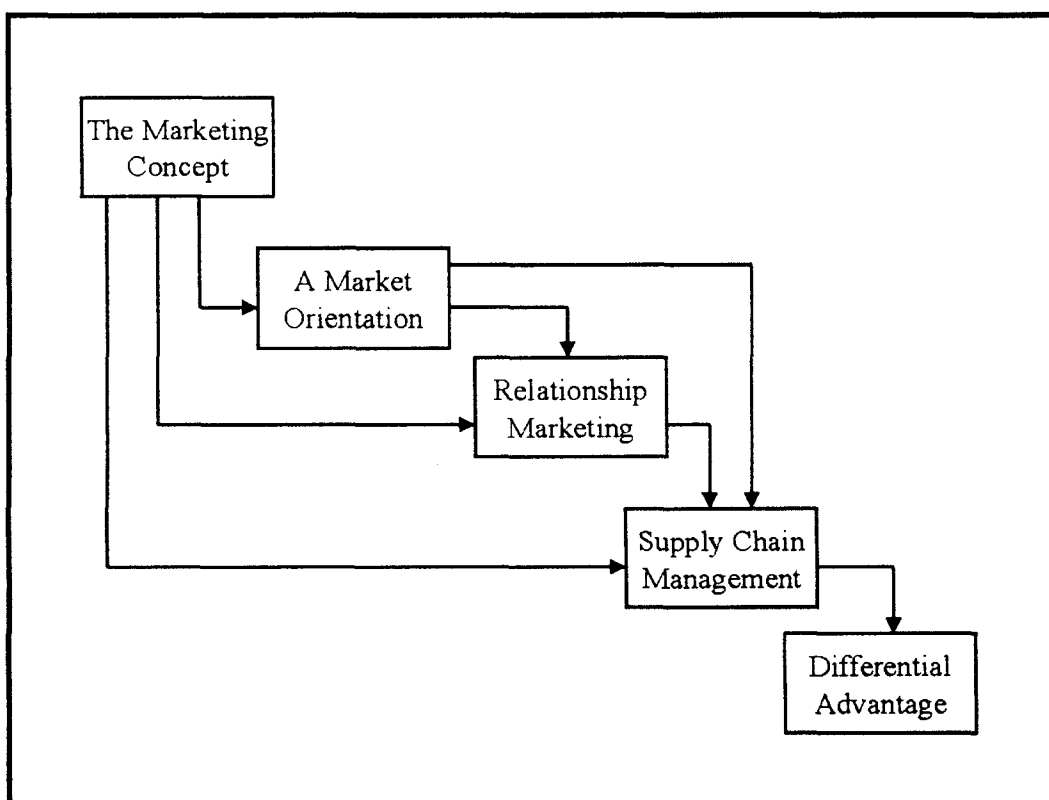


Figure 2.7: Integrative Model of Marketing and SCM

(Source: Min and Mentzer 2000 p.780)

Min and Mentzer cited Kotler’s proposal that the essence of marketing “is the transaction (exchange of values actually made between parties) and, thus, marketing is specifically concerned with how transactions are created, stimulated, facilitated

and valued” (2000 p.766). Transactions are seen as critical for customer satisfaction, which is the output of marketing, and lie “at the centre of the marketing concept and, thus, profit is not the objective [or output] but the reward for creating a satisfied customer” (Min and Mentzer 2000 p.767, citing Drucker). This notion of customer satisfaction through needs being met is the premise of the marketing concept and is a feature of this study as discussed in Chapter Four.

Bagozzi (1975), citing Ekeh, presented three types of exchanges: restricted, where there are reciprocal relationships between two actors denoted by $A \leftrightarrow B$, generalised, where there is univocal reciprocal relationships between at least three actors denoted by $A \rightarrow B \rightarrow C$, and complex, where there are mutual relationships between at least three actors denoted by $A \leftrightarrow B \leftrightarrow C$. Bagozzi noted “most treatments of, and references to, exchanges in the marketing literature have implicitly dealt with restricted exchanges, that is, they have dealt with... wholesaler-retailer, or other such dyadic exchanges” (1975 p.33). This notion of transactions as restricted exchanges is appropriate for the dyadic research of this study.

Min and Mentzer (2000) adopted Jaworski and Kohli’s conceptualisation of a market orientation as the implementation of the marketing concept by firms. A market orientation consists of three behavioural components: market intelligence gathering of current and future customer needs, dissemination of this market intelligence cross-functionally within a firm, and managerial responsiveness based on this market intelligence (ibid.). Siguaw, Simpson and Baker (1999) argued that using a market orientation to alter a channel of distribution relationship might enable firms to create a sustainable competitive advantage and enhance their business performance. Their empirical investigation using Jaworski and Kohli’s MARKOR scale found general support for a market orientation “instilling and promoting trust in a channel relationship, which then leads to greater cooperation and commitment...[which] ultimately results in enhanced organizational performance, which then... further improve[s] market orientation” (1999 pp.287-288).

However, their study was limited by cross-sectional data collected and measures used for the marketing orientation constructs. Also citing Jaworski and Kohli, Siguaw, Simpson and Baker (1999) noted it might take firms up to four years to properly develop a marketing orientation framework and thus a longitudinal study might provide the causal inferences they could not.

There were also significant differences between supplier and distributor responses on constructs of interest, notwithstanding their use of the MARKOR scale. For example, there was a negative relationship between co-operative norms and satisfaction with performance. Nevertheless, their study provided a contribution by highlighting “the importance and benefit of both parties in the channel dyad seeking to fulfil customer needs” (1999 p.289). This contribution reinforces the marketing concept notwithstanding its methodological difficulties with market orientation and leads to the idea of relationship marketing (RM).

Min and Mentzer recognised that exchange is at the centre of marketing but argued “relationship marketing goes beyond transactional exchanges, repeated purchases and even adversarial, long-term relationships” (2000 p.775). They saw RM as essential for SCM, which “requires partners to build and maintain long-term relationships” to be effective (2000 p.779). They further proposed that RM helps achieve SCM objectives “such as efficiency (i.e. cost reduction) and effectiveness (i.e. customer service)” (ibid.), thus “SCM achieves a differential advantage for the supply chain and its various partners” (2000 p.782). The nature of supplier-customer relationships are a feature of this study and are further discussed in Chapter Three together with strategic and business impacts of logistics on the firm.

2.5 CONCLUSION

This chapter has discussed methods employed for the literature review in this study and the nature of logistics and marketing. Logistics is a process for effecting the time and place utility of customers and involves activities of, inter alia, transport, warehousing, inventory management, and information processing. Although

originally part of a marketing and distribution discipline, logistics became a separate field of study in the 1950s and 1960s with the advent of the marketing concept.

However, the outputs of logistics and marketing are the same: the satisfaction of customer needs. Accordingly, the intellectual study of logistics should be combined with marketing, and there has been recent recognition of a need to reintegrate both topics. Further, logistics activities should be considered services within a marketing product framework as they have similar characteristics to services and do not usually alter the form or shape of a product.

The development of “canning, freezing and chilling technologies” in the 19th century dramatically “transformed preservation and distribution” of foodstuffs (Tansey and Worsley 1995 p.43), and was another factor in developing a time and distance separation between farmers and consumers as reported by Bartels (1988). However, actions of retailers enjoying concentration of power have transformed the food industry from a “production push to a consumer pull supply chain” (Finegan 2002 p.5) driven by “the drum beat of consumer demand” (Patel, Sheldon, Woolven and Davey 2001 p.116). This transformation and resulting emphasis on customer service, as retailers have defined it, is consistent with a market orientation and drives the need for further reintegration of logistics and marketing within the food supply chain.

The output of satisfying customer needs implies that customer service is an important feature of the logistics process. Customer service is also seen as an important and ongoing area of research in logistics. The next chapter considers the nature of customer service in the logistics context.

CHAPTER THREE

CUSTOMER SERVICE

3.1 INTRODUCTION

Chapter Two discussed the relationship and importance of logistics to marketing. This chapter presents concepts of customer service in both disciplines. The objective of this chapter is to set out the theoretical and conceptual frameworks surrounding customer service that will be utilised within the context of this study.

The chapter first considers definitions of customer service. Second, the need for customer service in logistics is discussed followed by a review of related research. Next, prescriptive techniques for customer service are investigated before the use of technology for customer service planning in logistics is introduced. Fifth, the questions of whether there can be too much customer service is examined. Finally, conclusions are provided to lead to the next chapter on customer satisfaction and service quality.

3.2 DEFINITIONS OF CUSTOMER SERVICE

Definitions of customers and consumers are required before a discussion of customer service can be undertaken. This study adopts definitions provided by Webster:

A consumer is a person who uses or consumes the product. A customer is an individual or business entity that buys the product, meaning they acquire it (legally, and probably but not necessarily, physically) and pay for it. Obviously, a major class of customers are all those types of marketing intermediaries or channel members who

buy for resale to their customers, including wholesalers and retailers of all types as well as business customers (original equipment manufacturers or OEMs) who integrate products into the products they manufacture (2000 p.20).

This study is concerned with intermediaries within the food processing supply chain that purchase products for direct resale or for further processing for direct resale, thus they are all considered customers. Nevertheless, views and needs of end-consumers may be applicable to these intermediaries as regards the customer service they provide to customers, and consumer considerations are discussed where appropriate.

What exactly is customer service, particularly in a logistics context? Johns (1999) noted there were 30 definitions for the word 'service' in his dictionary whilst *Collins Dictionary* (1998) provided 27 definitions. Thus, the concept of 'service' in a management context can be elusive and confusing. It can mean an industry or organisation, an outcome that has different perspectives by both service provider and customer such as the core product or product augmentation, product support such as after-sales service, and an act or process (Johns 1999, Woodall 2001).

As an example of a process, Johns noted management scientists categorise service as "one of the four principal functions of operating systems...[together with] manufacturing, transport and supply...[however this leads] to potential confusion since the latter two are clearly 'service' components in terms of their output" (1999 p.960). Johns' last point agrees with the concept of logistics processes and its activities being services that add to a core product offering.

There is much ambiguity about definitions in the academic logistics literature. Some authors associate customer service with physical distribution, or with service industries, or as an element of the marketing mix, or as a concept different from customer care (Donaldson 1994, Donaldson and Fletcher 1994, Gilmour, Borg, Duffy, Johnston, Limbek and Shaw 1994). Innis and La Londe (1994) argued that clear definitions of logistics customer service are needed to drive rigorous research, and that any attributes of logistics customer service being investigated should be limited to those that are the most important to the industry being studied. This

necessitates an understanding of those customer service dimensions that are important to customers in the context of an industry and its logistics experiences.

In addition to confusion, there is also a lack of consistency by practitioners in the application of the term and its meanings in logistics processes and activities. Byrne argued that there is “no single definition that garners widespread use” among firms (1992 p.66). Sabath noted that “customers define service differently than suppliers and prefer a lower but more reliable service level than that currently offered” (1978 p.32). The nature of the trade-off between cost and customer service affecting profitability will be discussed further in Chapter Five.

Perreault and Russ (1976) were one of the first sets of authors to consider the concept of customer service in physical distribution and defined physical distribution service “as the interrelated package of activities provided by a supplier which creates utility of time and place for a buyer, and insures form utility. From the customer’s perspective, then, physical distribution is the mechanism that assures that goods will be available” (1976 p.3). This definition fits the process role of logistics and its provision of marketing utility discussed in Chapter Two but lacks consideration of the marketing concept and market orientation which was also seen as an important and integral part of logistics’ relationship with marketing.

Dempsey and Lancioni expanded this definition “as the output of the distribution element of the marketing mix, or more specifically, the logistics portion of this element” whereby the most important activity “is the company’s consistency in meeting the level of service expected by the customer” (1989 p.7). This definition recognises the integration of logistics with marketing. However, it does not provide consideration of the measures required for implementing customer service.

La Londe and Zinszer (1976) undertook “the first comprehensive state-of-the-art appraisal of customer service activity in major U.S. corporations” (Lambert and Stock 1993 p.23). La Londe and Zinszer (1976) proposed that customer service in logistics has three components: it is an activity that has to be managed, it provides

objective performance measures for the firm, and it is an element of a firm's management philosophy. Their proposed model for customer service contains three distinct elements, pre-transaction, transaction and post-transaction, whilst their resultant definition defines customer service as "a customer oriented corporate philosophy which integrates and manages all of the elements of the customer interface within a predetermined optimum cost-service mix" (1976 p.159).

Yet, two shortcomings exist as regards the logistics discipline. Their study was entirely based in the U.S. and did not consider any European or other international contexts. U.S.-based studies also dominate empirical research in Chapter Seven. Second, components and elements of their study focus on prescriptive suggestions for the supplier that may not reflect the customer's viewpoint (Mentzer, Flint and Hult 2001, Mentzer, Gomes and Krapfel 1989, Pisharodi and Langley 1990). These shortcomings may result from the exploratory purpose of their study, commissioned by the predecessor to the CLM in the U.S., and a study objective that was to "provide a managerial framework for analyzing, evaluating and improving the customer service program of the individual firm" (La Londe and Zinszer 1976 p.iii).

Stock and Lambert have provided a more recent definition of customer service in logistics as:

a process which takes place between 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 is better off at the completion of the transaction than they were 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 (2001 p.98).

Elements in this definition support previous discussions of logistics activities as: an exchange process, providing intangible benefits to customers in terms of mutually beneficial added value i.e. a customer orientation suggested by the marketing concept, the dyadic and transactional nature of this exchange, and the trade-off required between service and cost. Schary (1992) also considered customer service a

process that is reflected in the “cybernetic” or feedback loops in his model. Thus, Lambert and Stock’s definition is appropriate for this study and will be used as the operative definition of customer service throughout. The next step is to examine the need for logistics customer service for firms.

3.3 THE NEED FOR LOGISTICS CUSTOMER SERVICE AND RELATED RESEARCH

Logistics has spawned from both quantitative and militaristic backgrounds and presents interesting academic challenges for the consideration of a supplementary and non-tangible phenomenon such as customer service (Kent and Flint 1997, Lambert and Stock 1993, Parasuraman 1998, Stock and Lambert 2001). However, as noted in Chapter Two, customer service and satisfaction are seen as important and relevant challenges. Customer service represents logistics’ interface with marketing and is an important component of the marketing mix to influence demand in the market (Innis and La Londe 1994, Pisharodi and Langley 1990). Technological advances, economic fluctuations, changing consumer behaviour and turbulence in business environments underpin these challenges (Dawson 1995, Christopher 1999, Hale 1999, Sheth and Sisodia 1999, Younger 1997).

Customers have become more sophisticated and demanding during the last thirty years and their expectations regarding suppliers’ abilities to meet their needs have subsequently increased (Daugherty, Sabath and Rogers 1992, Manrodt and Davis 1993). This sophistication has also been found to apply to consumers regarding retailers and service organisations (Sparks 1990/91, Hummel and Savitt 1988). Suggested management solutions for retailers include fostering a customer-orientated attitude amongst staff and focusing the firm’s operations towards a consumer driven culture (ibid., NatWest 1994).

Accordingly, many suppliers, retailers and service organisations have striven to improve customer service processes in their logistics functions to establish or maintain a competitive advantage. Desired outcomes are satisfied customers,

increased customer loyalty, repeat and increased purchases, and improved corporate financial performance (Daugherty, Stank and Ellinger 1998, Emerson and Grimm 1998, Manrodt and Davis 1993). These outcomes and their impact on the firm are discussed independently in Chapters Four, Five and Six.

An underlying factor modifying customer and consumer expectations is the change in technology-driven response systems used by suppliers and retailers. The three main response systems available today are efficient consumer response (ECR) (Boitault 1997, Younger 1997, Kotzab 1999, Whipple, Frankel and Anselmi 1999), collaborative planning, forecasting and replenishment (CPFR) (Stank, Daugherty and Autry 1999, Barratt and Oliveira 2001), and customer relationship management (CRM) (Allen 2001, Dawson 2001). A detailed discussion of prescriptive management techniques and technology in customer service response systems follows in sections 3.2.3 and 3.2.4.

Lastly, how does academic research fit into logistics customer service? Whilst research into logistics customer service has not been identified as a core issue in previous academic literature, it continues to retain a high emphasis (McGinnis, Boltic and Kochunny 1994). A focus on customers and customer service in marketing began in the late 1950s with the development of the marketing concept however a customer focus in logistics only began in the early 1970s (Lambert and Stock 1993, Kent and Flint 1997, Stock and Lambert 2001). Whilst this might suggest logistics thought lags marketing thought by about 15 years, it is more likely a result of the reintegration of the two disciplines at that time. Also, logistics prior to 1970 was considered mechanistic and firm orientated as opposed to customer orientated (Manrodt and Davis 1993).

Miyazaki, Phillips and Phillips (1999) performed a content analysis of articles published in JBL during its first 20 years of existence, from inception in 1978 until mid-1997. They split the years of analysis at 1988, which was the midpoint of the twenty-year anniversary. Miyazaki, Phillips and Phillips categorised topics according to the survey done by McGinnis, Boltic and Kochunny in 1994 using CLM

bibliographic classifications, publication within the relevant era derived by Kent and Flint (1997), and according to topic areas of insufficient coverage as reported by respondents in an editorial preface written by La Londe in a 1988 issue of JBL. In the latter, 28% of respondents reported insufficient coverage of customer service issues in JBL. The results are presented in Table 3.1.

	1978-87	1988-97	Totals	
Era 4: Customer Focus Classification (Kent and Flint 1997)	11	13	24	7.0%
CLM Classification (McGinnis, Boltic and Kochunny 1994)	8	14	22	6.4%
Insufficient Coverage Classification (La Londe 1088)	10	13	23	6.7%
Total JBL Articles during the period	121	221	342	100%

Table 3.1: Articles on Customer Service in First 20 Years of JBL
(Source: Miyazaki, Phillips and Phillips 2001)

To appreciate the non-quantitative nature of customer service, Kent and Flint suggested that future research in logistics should contain “a search for deeper understanding of behavioral issues, specifically customer perceptions of a firm’s logistics systems and their related behaviors” (1997 p.25). Thus, theories and techniques in the marketing discipline have been slow in finding application in logistics research, notwithstanding calls for reintegration with logistics (Harris and Stock 1985, Bartels 1988) and calls for other interdisciplinary applications in logistics (New 1997, Stock 1997).

Business practitioner writings have also considered customer service important. Peters and Waterman argued “all business success rests on something labelled a sale, which at least momentarily weds company and customer” (1982 p.156). They found excellent companies practised getting close to their customers and that “service, quality, reliability are strategies aimed at loyalty and long-term revenue stream growth and maintenance” (1982 p.157). Peters and Waterman’s findings suggested an obsession with these strategies and that “a wonderful concomitant to a customer orientation is that the winners seem to focus especially on the revenue-generation

side” (ibid.). Two consequences of such obsession were better customer segmentation and communication through listening to customers. The themes posited by Peters and Waterman will re-emerge throughout this chapter from later research undertaken in both the marketing and logistics disciplines.

A renewed focus on customer service research has also recently been undertaken by marketing academics. Parasurman and Grewal reported that the Marketing Science Institute’s (MSI) highest research priority in the late 1990’s was customers and consumers, and included, inter alia, subtopics of “components and drivers of customer loyalty, ‘total’ value proposition delivered by the supply chain, creating and delivering customer value, and building and managing customer relationships” (2000 p.9). Thus, some convergence and reintegration has appeared regarding the importance of customer service and satisfaction and related research topics between the marketing and logistics disciplines.

Several authors have succinctly discussed shortcomings in logistics customer service research. First, there are conceptual and definitional issues regarding customer service as discussed above (Donaldson 1994, Donaldson and Fletcher 1994, Gilmour, Borg, Duffy, Johnston, Limbek and Shaw 1994, Innis and La Londe 1994, Johns 1999). Second, the customer’s view is frequently overlooked (Mentzer, Gomes and Krapfel 1989, Innis and La Londe 1994, Johns 1999). Only since the late 1980s has research started to shift the focus from a supplier's viewpoint to a customer perspective, see Christopher 1986, Dempsey and Lancioni 1989 and Sterling and Lambert 1989. Notwithstanding this shift, Christopher has noted that the “majority of companies are still focused more on the products and services they manufacture or provide, rather than with the customers that they service” (1992, p.1).

Third, “previous research of logistics customer service has had little programmatic study and much research has overlapped” (Innis and La Londe 1994 p.3). A concentrated approach is therefore required to establish deeper theoretical frameworks in the logistics and marketing disciplines. Fourth, there are methodological issues such as “small sample sizes, low response rates, and the

failure to consider customer service with an equal consideration of other elements in the marketing mix” (ibid.). Fifth, “previous research has tended to focus on logistics service attributes while little attention has been given to the environment under which firms operate” (Emerson and Grimm 1998 p.17). Lastly, “little empirical research has been conducted on logistics effects in the service sector, including logistics services themselves” (Dresner and Xu 1995 p.23).

In summary, logistics and customer service are necessarily linked. Logistics is a process that looks to provide a customer with goods and services in accordance to their needs, and benefits the firm by reducing costs and increasing profits. These two features are the deliverables of the CLM definition. Thus, customer service research in logistics is important but is relatively under-researched. It has also suffered from a narrow focus related to mechanistic activities, prescriptive processes and other shortcomings outlined above.

3.4 THE NATURE OF CUSTOMER SERVICE AND PRESCRIPTIVE TECHNIQUES

The foregoing discussion raises practical questions regarding customer service and its implications for firms. For example, does the definition of logistics customer service work across all functional logistics areas, market sectors and marketplaces? What are the important dimensions of customer service and how are they measured? How can firms establish appropriate customer service strategies and policies?

There is some empirical research regarding these issues that is discussed in Chapter Seven. However some authors believe there are shortcomings in practitioner knowledge of strategy related to customer service (Donaldson and Fletcher 1994, Innis and La Londe 1994, Morris and Davis 1992) and practical application of existing theories (Byrne 1992, Markham and Aurik 1993).

An initial consideration should be the nature of the dyadic exchange and its purpose for the customer. Parasuraman argued that customers “evaluate service on the basis

of not only its outcome but also the process associated with it” (1998 p.313). This suggests an element of service quality attached to the process, and the nature of service quality in logistics is discussed in the next chapter. Parasuraman further noted that “scholarly research on the topic [of service quality] in business to business contexts is rather meager” (p.320) and its scope “in such markets has been limited to the logistics function” (p.313). However, he only cited two references from conference proceedings as evidence of work that has been carried out on service quality and did not make reference to any of the literature discussed in this section, thus Parasuraman’s empirical frame of reference lacks depth. Notwithstanding, the useful contribution of his article is the typology shown in Figure 3.1, also presented by Parasuraman and Grewal (2000).

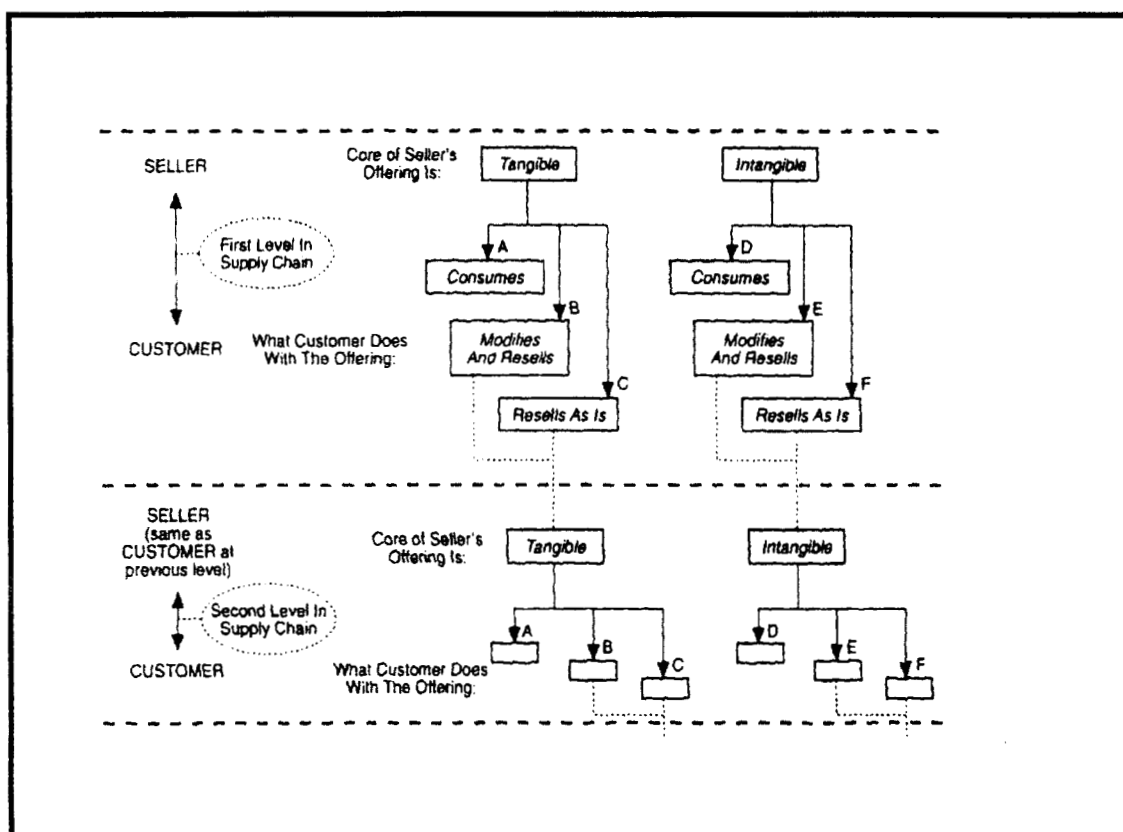


Figure 3.1: Seller-Customer Links in Business-to-Business Markets

(Source: Parasuraman 1998 p.311, Parasuraman and Grewal 2000 p.11)

Parasuraman and Grewal (2000) also argued the nature and importance of customer service could vary depending on the type of seller-buyer dyad and the nature of the product exchanged between the dyad actors. The typology in Figure 3.1 highlights various seller-customer dyads in a linear supply chain based on whether the seller’s core product offering is tangible or intangible and what the customer does with the product offering, i.e. consume it, modify and resell it, or just simply resell it.

Customer service provided as part of the enhanced product offering would undoubtedly vary among these six different types of dyads both in terms of needs and value added. Jones and Riley (1992) demonstrated customer response to differential customer service and value, shown in Figure 3.2, as part of market segmentation to try and gain competitive advantage. Thus, knowledge of the type of dyadic exchange is the first step in the development of a firm's customer service process.

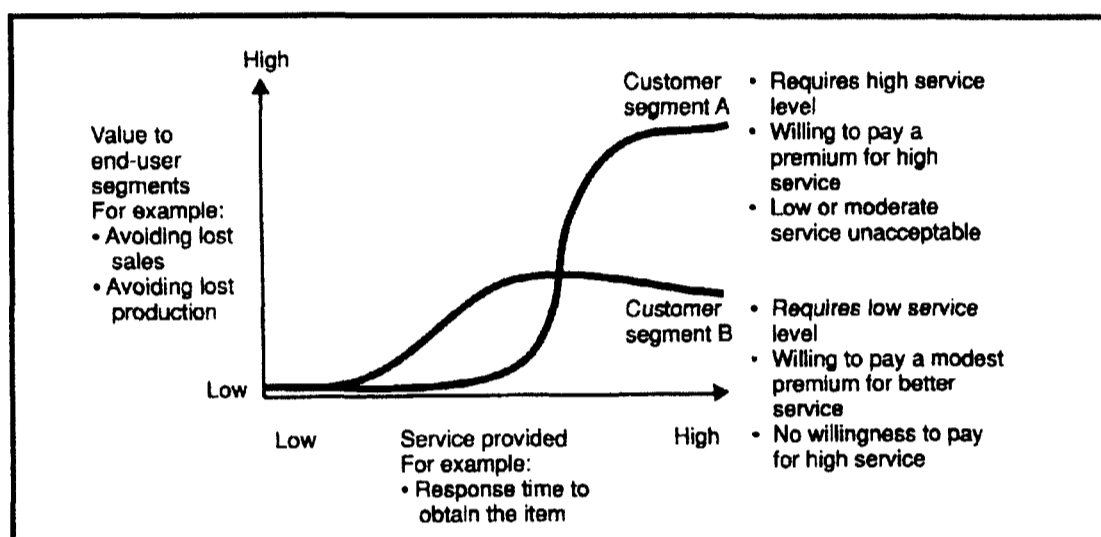


Figure 3.2: Differential Response to Customer Service

(Source: Jones and Riley 1992 p.91)

The next step in the process is to understand a customer's requirements or needs related to the total product offering. This can be determined by auditing existing customer service policies (Christopher 1992, Christopher and Yallop 1992, Lambert and Stock 1993, Stock and Lambert 2001). A method for conducting such an audit is presented in Figure 3.3.

The first stage in an audit is to determine the customer's definition of service, which requires a customer focus advocated in the marketing concept. The second stage is to determine the trade-off between customer service and cost, which could include a Pareto analysis of the firm's product offerings versus their percentage of sales revenue generated. The trade-off issue is discussed further in Chapter Five. The third stage entails comparison with competitors to determine where the firm fits, and finally the fourth stage is to determine the product-service profile for the firm. This

study utilises the first two stages, but does not extend to benchmarking the industry nor providing suggested product-service portfolios and policies.

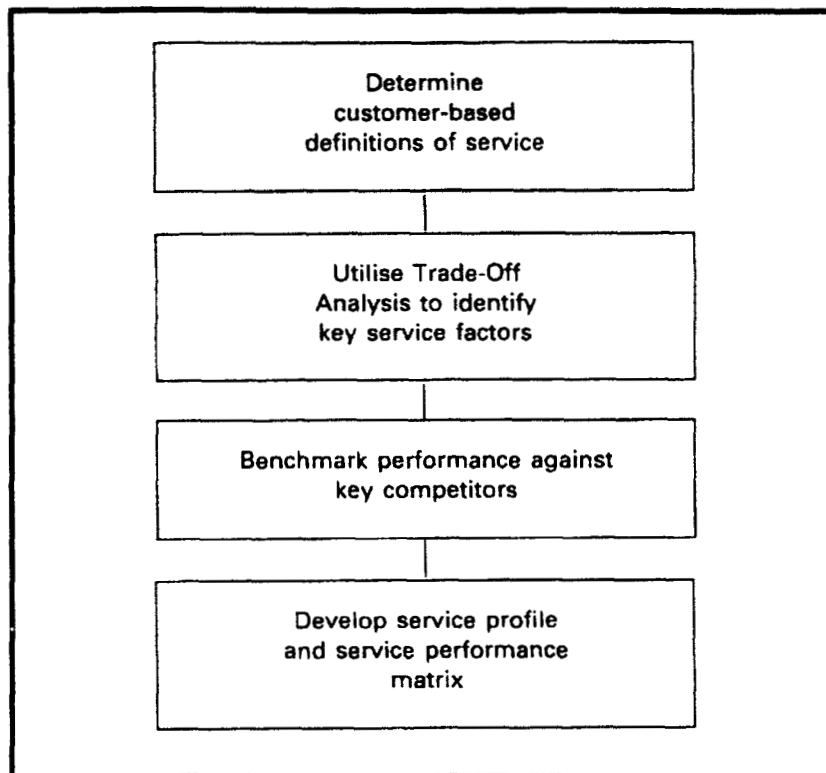


Figure 3.3: The Customer Service Audit

(Source: Christopher 1992 p.58, Christopher and Yallop 1992 p.197)

Christopher (1986) has also presented a framework for establishing customer service policies shown in Figure 3.4. This framework is not significantly different from Figure 3.3 in terms of stages and processes but does introduce the concept of segmenting the market by service requirements. Christopher's suggested approach to segmentation includes "identifying key components of customer service as seen by customers themselves, establishing the relative importance of those service components to customer, and identifying 'clusters' of customers according to similarity of service preferences" (1998 p.49).

Markham and Aurik concurred that "not all service dimensions are equally important to each customer. That is why understanding each customer's requirements is so critical" (1993 p.56). O'Neil and Iveson (1991) proposed a framework for examining customer service in firms predicated on first undertaking an analysis of the firm's strengths, weaknesses, opportunities and threats, or SWOT analysis through internal and external audits. Only after such analysis could proper customer service strategies be developed and implemented. This supports Markham and Aurik's contention of understanding customers as well as the firm's capabilities.

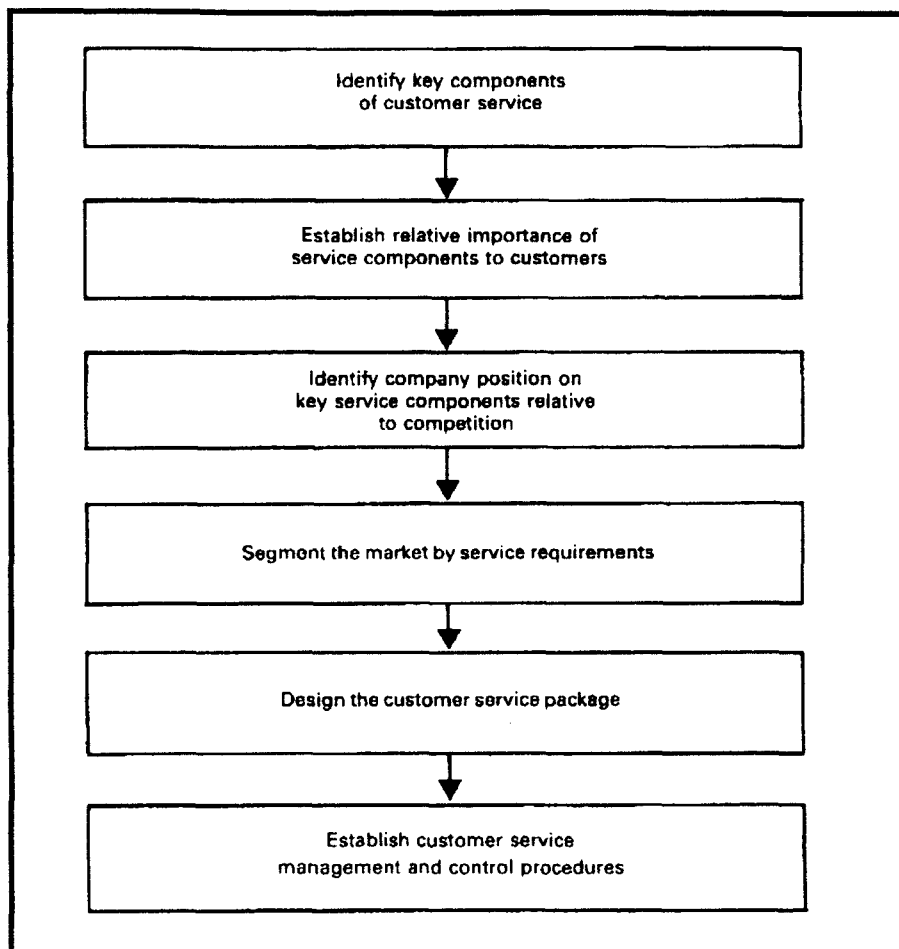


Figure 3.4: Framework for Developing Customer Service Policies
 (Source: Christopher 1986 p.38)

Understanding and obtaining information about customer requirements necessitates information exchange between customers and firms. Manrodt and Davis noted the “need for accurate information remains central to the [logistics] systems approach... is vital to effective logistics planning...[and is] indeed a substitute for inventory” (1993 p.57). Complaint analysis is one information exchange concerning perceived customer dissatisfaction resulting from a customer service experience or critical incident.

Some researchers have utilised complaints about service offerings as sources of information and measures of customer dissatisfaction (Lapidus and Schibrowsky 1994, Dresner and Xu 1995), however the notion of doing so is reactive, not proactive, and does not consider what features actually provided customer satisfaction. Thus, whilst it “might be an effective way to fix yesterday’s problems” it is “a poor way to determine today’s (or tomorrow’s) customer requirements” (Markham and Aurik 1993 p. 55). It has also been called a “defensive marketing strategy because its focus is directed at aggressively protecting existing customers rather than searching for new ones” (Lapidus and Schibrowsky 1994 p.51).

Firms undertaking only complaint analysis might find it difficult to determine current and future success factors and establish any kind of competitive advantage. However, complaint handling is “significantly and strongly associated with both trust and commitment” and research has shown that a “firm’s favorable actions during episodes of conflict demonstrate its reliability and trustworthiness” (Tax, Brown and Chandrashekar 1998 p.72). These concepts related to trust are important variables in supplier-customer relationships and are discussed in Chapter Six. Complaint analysis thus has a role as part of a post-transaction process but is not a complete form of information for firms when used in isolation.

Continued technical innovation in society, such as the Internet, may also radically change widely held concepts about the nature of logistics and alter how customers and consumers actually purchase goods and services (Sheth and Sisodia 1999). The Council of Logistics Management definition (2002) presented in section 2.2.1 includes a customer service component that provides both ‘time utility’ and ‘place utility’ for the customer that enables them to obtain the ‘right product in the right place at the right time’ (Lambert and Stock 1993, Stock and Lambert 2001).

Customer service enhanced by technology is therefore seen as a feature in any logistics strategy, as an empty shelf in a traditional retail shop or e-mail advising an Internet retailer is out-of-stock would not stimulate sales or inspire consumer confidence. The next section considers some of the technological tools available to firms for customer service processes and customer feedback.

3.5 TECHNOLOGY AND CUSTOMER SERVICE

Technology, especially computerised information systems, is “essential to meeting the strategic goals of integration... [and in] support of internal firm operations” (Gustin, Daugherty and Stank 1995 p.3). This exchange between customers and suppliers “is not a one-time-program but rather an ongoing improvement process” (Byrne 1992 p.67) and thus lends itself to computerisation. The exchange “matching

needs and expectations is a cybernetic process, a form of control” (Schary 1992 p.343).

Pisharodi and Langley noted “cybernetic or control theory is a general approach to the understanding of self-regulating systems” (1990 p.32). System controllers in scientific applications use an iterative feedback or comparator loop that senses the differences between an input signal compared to a reference value and correspondingly adjusts an output to achieve a steady-state system. Pisharodi and Langley argued its application in logistics relates to the customer. A customer’s response such as purchase intention or satisfaction is the output behaviour and dependent variable, whilst their perceptions of actual customer service is the input and their expectations of desired customer service is the reference value (ibid.). The expectations versus perceptions schema in a cybernetic system is analogous to aspects of customer satisfaction and service quality theory presented in the next chapter.

The notion of constant adjustment and some variation in the state of the service relates to a ‘zone of tolerance’ held by customers for service variation. This tolerance also relates to a traditional scientific method for quality improvement in manufacturing known as statistical process control (SPC). SPC sets upper and lower production boundaries to establish a ‘zone’ of acceptable quality and also offers a method for establishing a correct mix of customer service elements according to customer preferences (Holcomb 1994).

Several computer-driven systems have been developed for use in supply chains and logistics processes. The main systems of ECR, CPFR and CRM were previously introduced in section 3.3. ECR began in the early 1990s and was developed by U.S. consultants Kurt Salmon Associates for a working group of grocery industry representatives concerned about losses in market share and declining productivity (Kotzab 1999). ECR is defined as a grocery industry strategy in which distributors and suppliers are working closely together i.e. in partnership to bring better value to the grocery consumer through a seamless delivery of products at a total low cost

(ibid., Whipple, Frankel and Anselmi 1999). The Salmon ECR model is shown in Figure 3.5.

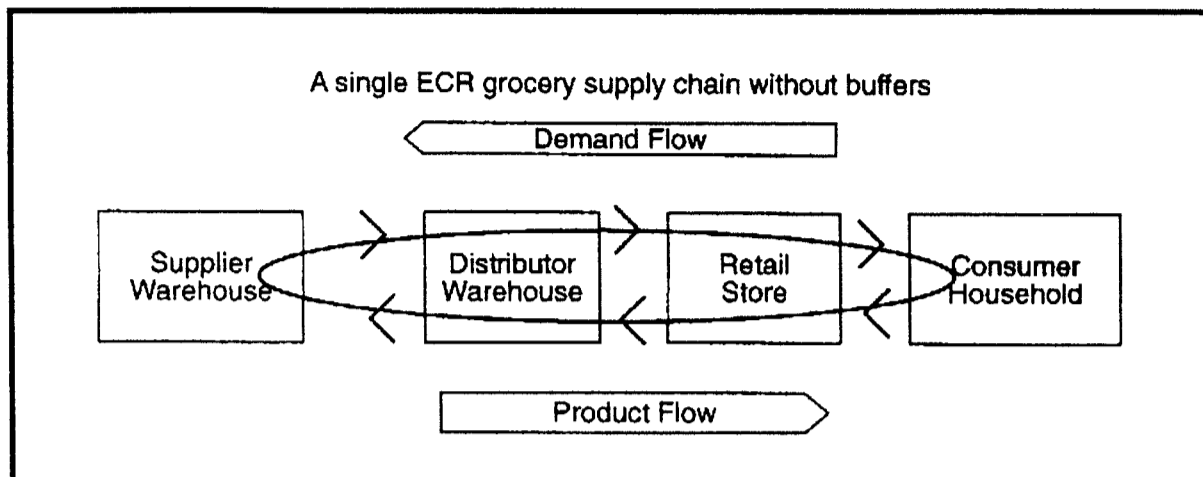


Figure 3.5: The ECR Model

(Source: Kotzab 1999 p.367)

This seamless delivery is consumer-driven through a paperless information flow initiated by a retailer’s electronic point-of-sale (EPOS) that also sets and manages production levels for suppliers (Kotzab 1999). Expected benefits from ECR include lower total system inventories and costs, enhanced consumer value in terms of choice and quality of products and more successful development of new consumer-driven products (Boitault 1997, Younger 1997, Kotzab 1999, Whipple, Frankel and Anselmi 1999).

Leading European retailers and manufacturers founded ECR-Europe in the mid-1990s to consider ECR for the European business situation (Younger 1997, Kotzab 1999). Much was expected in terms of short-term results despite Salmon and other ECR theorists claiming it was a long-run strategy (Kotzab 2000b). In the UK, the top five grocery retailers – Tesco, Sainsbury, Safeway, Somerfield and Asda (now owned by Wal-Mart from the U.S.) – account for more than 70% of the UK retail food market (Younger 1997). This has led to the UK grocery supply chain being declared “amongst the most efficient in the world,” thus the potential impact of ECR in the UK “may not be as significant as in the U.S. or Europe” (Patel, Sheldon, Woolven and Davey 2001 p.140).

However, implementation of ECR in the U.S. and Europe, whilst easy in theory, has proved difficult in practice, and early results have been disappointing (Mathews

1997b, Whipple, Frankel and Anselmi 1999, Kotzab 2000b). Implementation of an ECR system means firms must decide how to vertically coordinate various supply chain actors. Thus, issues regarding adversarial power and channel control have also been barriers to successful implementation (Whipple, Frankel and Anselmi 1999, Mitchell, Corsten, Jones and Hofstetter 2001).

An early ECR pilot programme at Somerfield saw inventory levels reduced by up to 25% but service levels improved by only about 2.5% (although no baselines were provided). Despite integration difficulties some 'soft' benefits occurred, such as improved management of seasonal events (Younger 1997). Other ECR pilot programmes have benefited primarily dyadic relationships between firms as opposed to the entire supply chain (Kotzab 2000b).

Stock-outs continue to be a problem in some settings, product category management that is a feature of some ECR applications has been criticised as being too time and data intensive, and ECR is still perceived as a technique only suitable for large manufacturers and retailers (Mitchell, Corsten, Jones and Hofstetter 2001). Other implementation issues to be solved as ECR continues to unfold include:

Who identifies and allocates costs and benefits in the supply chain?
Who resolves an actor benefiting at the cost of another actor?
What supply chain performance standards are appropriate? and,
What sanctions should apply to actors who do not perform to these standards?" (Patel, Sheldon, Woolven and Davey 2001 p.142)

Notwithstanding these issues and its lack of early success, the concept of ECR as a prescriptive management technique "will never go away" and "will continue to evolve" (Mathews 1997b). This evolution is intended to incorporate all actors in the food and other fast moving consumer goods (FMCG) supply chains.

CPFR is a follow-on to ECR that was developed by the Voluntary Inter-industry Commerce Standards (VICS) group in the U.S. to "minimise out-of-stocks by synchronising forecasting and planning between retailers and manufacturers" (Corsten and Hofstetter 2001 p.62). This enhancement is therefore a "step beyond ECR" or other automatic replenishment programs (ARP) that rely on "inventory

restocking triggered by actual needs rather than relying on long-range forecasts and layers of safety stock just in case” (Stank, Daugherty and Autry 1999 p.75).

CPFR, as presently configured between only manufacturers and retailers, is currently unsuitable for every firm as firms require sufficient revenue and product volumes to be economically feasible and real-time information sharing on a common platform such as the Internet (Stank, Daugherty and Autry 1999, Marzian and Garriga 2001). This will require collaboration and technological sophistication throughout the entire supply chain (ibid.) however this depth of potential development has been criticised as a panacea. Benefits of CPFR identified by several authors (Stank, Daugherty and Autry 1999, Marzian and Garriga 2001) have been criticised as ‘myths’ by Gellman (2001) and the following summarises his arguments:

Collaboration produces the lowest logistics costs, but for whom?
Collaboration requires actors sharing a similar vision of the future, this may not be necessary, and what about anti-trust legislation regarding a potentially illegal act?
Collaboration leads to more competition between logistics service suppliers, however won't such concentration stifle innovation as argued by the economist Joseph Schumpeter and thus won't suppliers become ‘servants’ to the buyer?
Mutual interest assures mutual trust in collaboration, but what about trade secrecy, data security and employees moving on?
Internet-based purchasing collaborations are the way of the future, but none have been successful so far and appear to be primarily commodity-driven, and
Collaborative decision-making in logistics influences technological change, yet the drift in discussions of container size change suggests collaboration defers discussion of technological change.

The reported number of active CPFR partnerships in the U.S. is only 20 but a survey published in 2000 indicates that 80% of grocery executives intend to increase collaboration in the future (Barratt and Oliveira 2001). The uptake in Europe has been slow with only five pilots reported (Barratt and Oliveira 2001, Marzian and Garriga 2001). This lack of progress in Europe may be a result of the Y2K phenomenon and the ‘dot.com’ retreat slowing progress (Corsten and Hofstetter 2001), differences in retailers’ economic status, cultural issues, existing ECR

implementation and supply chain structures, or sustained business consolidations and increased market competition with foreign entrants (Marzian and Garriga 2001).

CRM is based upon relationship marketing and partnership theory that is discussed in Chapter Six. CRM is primarily a consumer software tool (Allen 2001) that enables firms to practise a customer or market orientation to capture customer information, measure their attributes such as purchase behaviour and profitability, and communicate with them (Dawson 2001). A model for CRM detailing this view of CRM is shown in Figure 3.6.

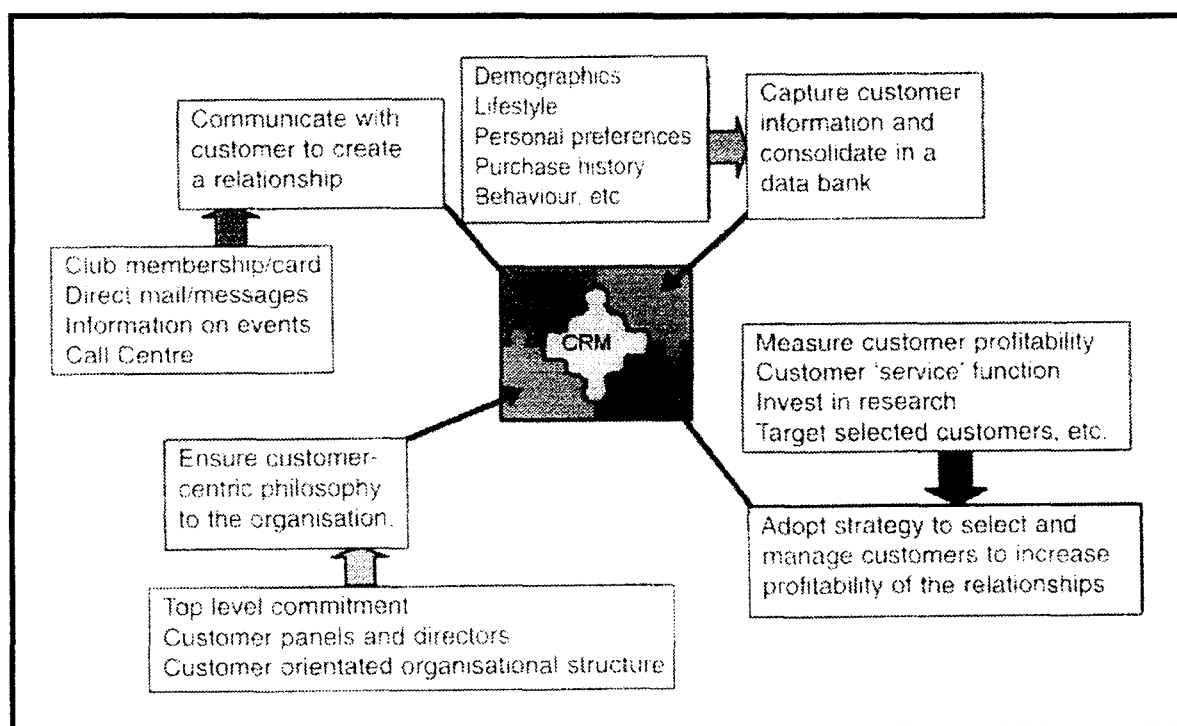


Figure 3.6: The CRM Model

(Source: Dawson 2001 p.2)

Food retailers and service retailers, such as banks, are large users of CRM for direct marketing to consumers. One practitioner argued that the four categories surrounding the CRM process are sales, marketing, the call/contact centre, and customer service and support (Irestahl 2001). Yet another considered CRM is an activity to identify, qualify, acquire, develop and retain increasingly loyal and profitable customers by delivering the right product or service, to the right customer, through the right channel, at the right time and at the right cost (Galbreath and Rogers 1999). All these views have similar features but are confusing in terms of detail.

CRM has only been around for less than a decade (Dawson 2001), and its lack of specific underlying theory may inhibit its understanding by academics and practitioners alike. Further, Irestahl (2001) stated CRM may not be applicable to all customers in large organisations, thus some form of Pareto analysis or trade-off is required. Nevertheless, expenditure on CRM software is predicted to rapidly grow from €4.9 billion in 1999 to €23.5 billion in 2004 (Allen 2001).

ECR, CPFR and CRM rely on technology to underpin their development and implementation. Technology has been well established at the retail level and for branded manufacturers, but is presently not so well established further upstream in the supply chain. Accordingly, technology is considered a minor issue for this study due to its lack of development throughout the UK food supply chain.

3.6 TOO MUCH CUSTOMER SERVICE?

Firms attempt to meet various shareholder or stakeholder requirements in the ordinary course of their business. Profitability, which is calculated from sales revenue or turnover minus expenses, is one of those requirements and is by no means assured for those firms that do not consider both factors carefully. Without profits, shareholder capital and retained profits will erode and bankruptcy might result.

Thus, there is a necessary trade-off between determining and providing additional customer service features sought by customers and the costs incurred to do so. Sabath argued that customer service levels are usually higher than a customer would set them and recommended that firms should “banish the costly misconception that all customers seek or need improved service” (1978 p.26). However, Markham and Aurik cautioned that “selecting when to meet and when to exceed customer expectations is key. Most customers accept a relatively wide range of performance in any given service dimension” (1993 p.56).

These observations reinforce the notion that firms must adopt a customer-orientated view and seek out customer needs. The service quality zone of tolerance discussed in

the next chapter further considers customer acceptance of variance in service performance. Thomson (1998) noted that firms also have to ask customers the right questions to ensure important and relevant criteria are captured. For example, Sabath (1978) discussed a food manufacturer whose 98% service level necessitated large inventories in many warehouse locations. However this often resulted in shipping dated merchandise and customers thus perceived this practice as evidence of low quality and poor service.

Lambert and Stock (1993) and Stock and Lambert (2001) argued that firms providing logistics customer service face several cost trade-offs to meet cost effectiveness and provide customer service benefits. Their service and cost trade-off model first presented as Figure 2.5, and reproduced as Figure 3.7, shows the relationship between logistics activities and basic marketing mix variables.

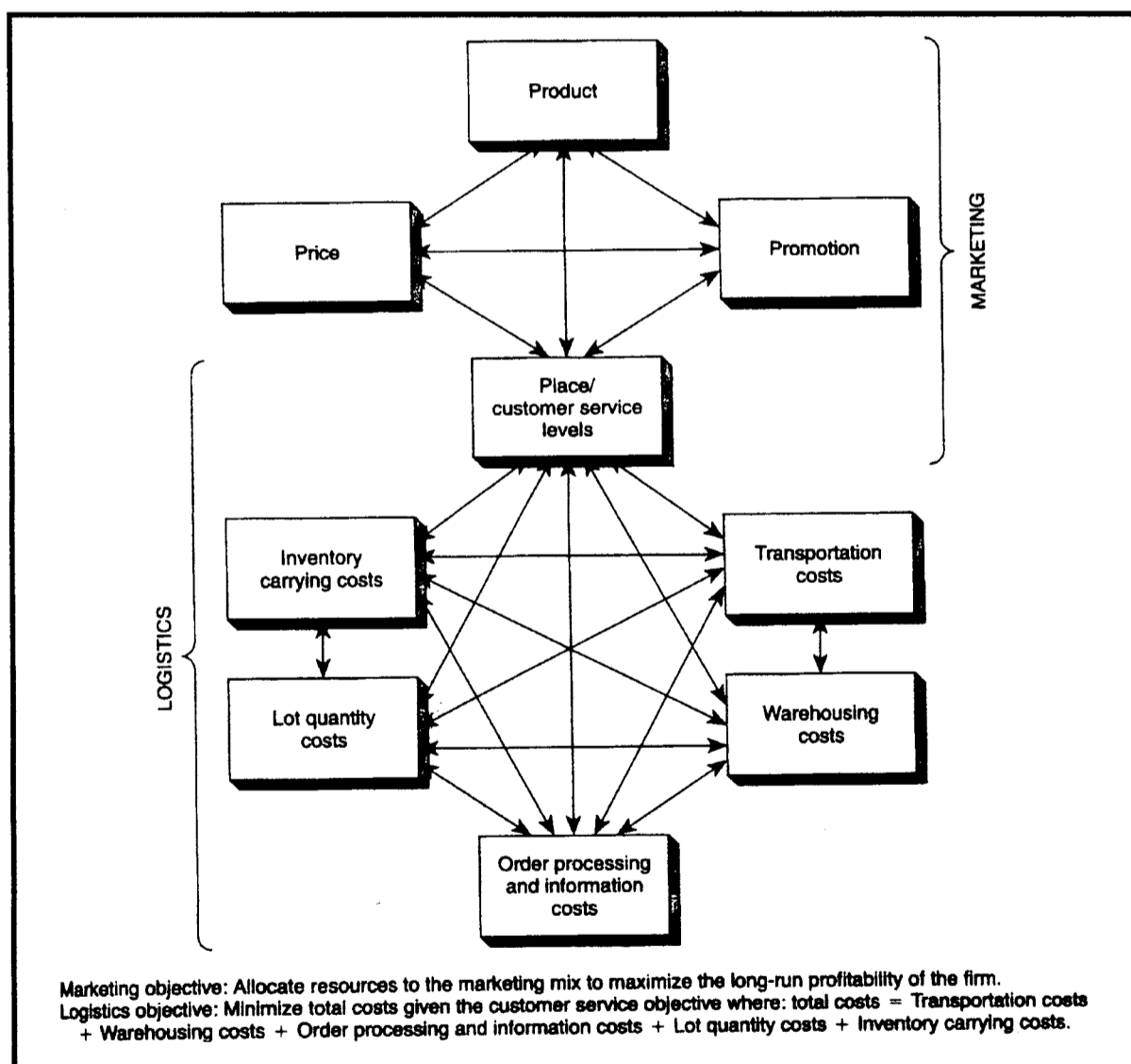


Figure 3.7: Logistics Service and Cost Trade-off Model

(Source: Lambert and Stock 1993 p.42, Stock and Lambert 2001 p.97)

The model details the trade-off between minimising costs and maximising profit whilst maintaining or improving customer service. Firms must carefully choose among the various cost trade-offs to satisfy customers' needs and maximise profits whilst minimising total costs and not wasting their scarce marketing mix resources. This would appear to be a simple procedure, but some research suggests otherwise.

Byrne (1992) considered that quality in logistics means meeting agreed-to customer requirements and expectations. He concluded that suppliers need to develop and deliver service offerings more quickly in the light of the many changes to distribution that have emerged such as technological advances of electronic data interchange and just-in-time delivery. However Richardson (1998) argued that the notion of pleasing the customer at every turn and regardless of cost has undergone a re-evaluation such that suppliers or shippers are now attempting to accommodate customers while optimising the supply chain. This tactic requires suppliers to negotiate with the customer and possibly cost share with other actors in the supply chain (ibid.). Such negotiations may be difficult to implement, as there is little evidence that logisticians and suppliers have attracted sufficient customer interest in logistics activities (Blanding 1992). This may be indicative of suppliers not properly determining customer needs when they establish customer service policies and trade-offs.

The foregoing suggests that a customer's product and service needs, and their subsequent supplier selection criteria for logistics services, may extend beyond usual criteria discussed in business-to-business marketing literature such as product quality, technical competence, and competitive prices (Kotler 2000, Jobber 2001). Customer evaluation of logistics suppliers may include a number of intangible factors related to the service being provided as the customer seeks added value or utility from it. An example is whether customer service representatives are on-call 24 hours a day. A firm must therefore have the ability to recognise and respond to customer needs if it is to have any chance in satisfying them and achieving the benefits of loyalty and profitability discussed in Chapter Five.

3.7 CONCLUSION

Customer service is a necessary requirement in logistics and affected by various environmental factors shaping today's marketplace. The logistics discipline can learn from the marketing discipline in terms of techniques and methodologies to investigate phenomena of interest, particularly as the latter has had a fifteen-year head start in examining such issues. The definition of customer service adopted for this study has been presented as considering value added benefits to customers in a dyadic exchange whilst ensuring that costs incurred to do so do not outweigh any potential benefits to the supplying firm.

Prescriptive techniques appropriate to this study include consideration of the dyadic exchange in determining and understanding customer needs and establishing customer service features to fulfil them. Actors on both sides of the dyadic exchange thus require information. Technology and computerised systems can assist in gathering this information, but have their own issues regarding effectiveness and dissemination to all actors. The establishment of customer service features and issues of information are also driven by a basic trade-off between costs incurred versus enhanced profit received. Each industrial sector will also have its own unique needs and issues that further complicate such considerations.

Customer service activities also represent ongoing challenges to the UK food processing industry, but are also under-researched as this industry that is affected by primary producer crises, product commoditisation and increasing retailer power (Ennew, McDonald, Morgan and Strak 1995). Strak and Morgan argued the future of this industry will see "new products and services that reflect the changing pattern of consumption and consumer tastes, especially those that emphasise value-added in food products" driven by information technology that "offers food companies the chance to significantly improve their contact and understanding of customers and to gain cost efficiencies in distribution" (1995 p.346). These scenarios will be realised by a demand-driven requirement to meet consumer needs. The knock-on effect will be a requirement to meet the needs of all actors throughout the UK food chain in order to satisfy the end objectives of consumers.

However, the successful output of these customer service considerations is a satisfied customer, which then should lead to increased profitability of the firm. The next chapter considers the nature of customer satisfaction and service quality, and their relationship to customer service.

CHAPTER FOUR

CUSTOMER SATISFACTION AND SERVICE QUALITY

4.1 INTRODUCTION

Chapter Three discussed the issues of customer service in logistics and marketing. This chapter introduces concepts of customer satisfaction and service quality as an extension to the discussions in the last chapter. First, customer satisfaction will be discussed regarding its definition, the nature and meaning of satisfaction, its relationship to logistics, and prescriptive techniques. Then, service quality will be discussed regarding its concept, various models including SERVQUAL and criticisms of it, and service quality related to logistics. Finally, conclusions on these two topics will be presented as a prelude to the discussion of the importance of customer service, customer satisfaction and service quality to logistics in the next chapter.

4.2 CUSTOMER SATISFACTION

4.2.1 Definition of Customer Satisfaction

Few things are as fundamental to consumers, the firm and the marketing concept as the notion of satisfaction (Spreng, MacKenzie and Olshavsky 1996, Oliver 1997). Satisfied customers should be the outcome of a firm's successful customer service policy.

What is satisfaction in both a general and a logistics context? If a firm provides intangible benefits to customers through its logistics activities and services, how do

they know their customers are satisfied with the services, and presumably with the firm? Can a firm measure the customer's level of satisfaction, and if so, what measure does the firm use?

These are important questions for a firm to consider when establishing and managing its customer service activities and policies. Firstly, a definition of satisfaction is required. Oliver argued that "few would agree on what this concept called satisfaction is" (1997 p.11). *Collins Dictionary* (1998) provided seven definitions for 'satisfaction' of which three are related to religious atonement and reparations and three are related to the concept of fulfilment, thus conceptual ground may not be as confusing as it is for service.

Oliver (1997) noted that many definitions of satisfaction tend to be process definitions. Such definitions "define key concepts and the mechanisms by which the concepts interact" such that each definition recognises satisfaction as "the end state of a psychological process" (Oliver 1997 p.12). This proposes satisfaction is a cognitive state of mind for consumers and customers predicated upon certain conceptual process interactions.

Oliver's definition of satisfaction is:

the consumer's fulfillment response. It is a judgment that a product or service feature, or the product or service itself, provided (or is providing) a pleasurable level of consumption-related fulfillment, including levels of under- or overfulfillment (1997 p.13).

Anderson and Sullivan (1993) considered the notion of under or over fulfilment is driven by a post-purchase evaluation of product quality given pre-purchase expectations. Further, Anderson, Fornell and Lehmann (1994) argued satisfaction is the post-purchase evaluation of a specific purchase occasion that modifies expectations on each occasion, and is thus cumulative over time. These enhancements to Oliver's definition introduce concepts of quality and continual or longitudinal assessment discussed below. Thus, the operative definition of customer satisfaction for this study is adapted as the customer's fulfilment response to a

logistics service event, including levels of under or overfulfilment that is modified over time by post-purchase perceptions.

4.2.2 The Nature and Meaning of Customer Satisfaction

Jones and Suh argued “the theory and practice of customer satisfaction measurement have made tremendous advances during the past three decades, debate continues concerning the ‘best’ way to conceptualize and measure customer satisfaction” (2000 p.147). Also, due to increased competition and the development of relationship marketing, customer satisfaction should receive “even more attention during the next decade” (ibid.).

Oliver (1997) reviewed advances in customer satisfaction research since the early 1970s and encapsulated various theoretical structures and empirical studies. Oliver’s contribution to satisfaction theory is significant, however it encompasses a narrow product marketing and consumer point of view and contains limited types of examples and sample frames. Oliver’s work has primarily been conducted in the automobile sector (Oliver and Swan 1989), or with sample groups of students (Oliver 1980), or with both (Mano and Oliver 1993, Oliver 1993).

Other empirical research in satisfaction has only considered a consumer context and has investigated diverse samples and consumer products. Examples include a general mall intercept concerning a video disk player and a house plant (Churchill and Surprenant 1982), a church congregation and a camcorder (Spreng, MacKenzie and Olshavsky 1996), students and academic advising (Spreng and Mackoy 1996), university faculty and hotel services (Voss, Parasuraman and Grewal 1998), consumer panels and interactive television entertainment and cellular communications services (Bolton and Lemon 1999), and students and hairstylists/barbers (Jones and Suh 2000).

Whilst Oliver (1980) extended the expectancy-disconfirmation paradigm discussed below, other studies have examined different factors such as equity and payment equity (Oliver and Swan 1989, Bolton and Lemon 1999), relationships as an

affective paradigm as opposed to a cognitive paradigm (Oliver 1993, Mano and Oliver 1993), consumer desire and information satisfaction (Spreng, MacKenzie and Olshavsky 1996), durable versus non-durable products (Churchill and Surprenant 1982), transaction versus overall satisfaction (Jones and Suh 2000) and price satisfaction (Voss, Parasuraman and Grewal 1998).

These studies have contributed elements to satisfaction theory, however whilst this research is extensive Voss, Parasuraman and Grewal noted “empirical evidence from this research has been equivocal” (1998 p.46) and thus “has produced mixed results” (1998 p.55). Such equivocation may be due to the narrow scope and diversity of this research that limits generalisation of findings to other products and groups. Thus, debate continues concerning the ‘best’ way to conceptualise and measure customer satisfaction (Jones and Suh 2000). More importantly, these studies do not address satisfaction in terms of the customer-supplier dyad that is a main feature of this study. A review of the theoretical underpinnings is therefore required to determine the applicability of this satisfaction theory to this study’s context.

The “dominant theoretical paradigm in many satisfaction fields” is the expectancy-disconfirmation paradigm that has its roots in social and applied psychology (Oliver 1997 p.23). Oliver presented other satisfaction comparison operators and resulting consumer cognition but recognised that “the consumer satisfaction literature has not elaborated on these mechanisms to the same extent that it has on disconfirmation” (1997 p.23). Moreover, other operators more or less utilise the concept of a comparison to an antecedent state to derive an outcome that can be considered either satisfactory or unsatisfactory.

The expectancy-disconfirmation paradigm presents its satisfaction judgements as a function of two constructs: (1) preliminary or baseline a priori expectations as antecedents of a product or service’s performance, and (2) an ex-post comparison that yields a perceived confirmation or a perceived positive or negative ‘disconfirmation’ of expectations. If perceptions equal expectations, e.g. $P=E$, then expectations are confirmed. If perceptions exceed expectations, e.g. $P>E$, then

expectations are positively disconfirmed. However, if perceptions do not exceed expectations, e.g. $P < E$, then expectations are negatively disconfirmed. Table 4.1 presents the expectancy-disconfirmation paradigm in terms of the probability of desirable and undesirable events occurring during a consumer's experience.

Disconfirmation	Consumer's Experience
Positive ($P > E$)	Low-probability desirable events occur, and/or high-probability undesirable events do not occur.
Zero ($P = E$)	Low- and high-probability events do not occur as expected.
Negative ($P < E$)	High-probability desirable events do not occur, and/or low-probability undesirable events occur.

Table 4.1: Categories of Disconfirmation and the Consumer's Experience

(Source: Oliver 1997 p.104)

A confirmation of expectations, or zero disconfirmation, is considered a state of satisfaction. A negative disconfirmation indicates expectations were not met and yields a state of dissatisfaction. Alternatively, a positive disconfirmation indicates expectations were exceeded and yields a state of excessive satisfaction. Oliver (1980, 1997) suggested that disconfirmation indicates preliminary expectations are incorrect, however it may also be that a firm providing the product or service experience did not perform as it had in the past suggesting a change in product or service quality. For example, the percentage of products damaged in a delivery may be 15% in one event whereas it is usually no more than 5% on other events.

Spreng, MacKenzie and Olshavsky contended there are disparate views "about the conceptual definition of the expectations construct" (1996 p.16). They argued some authors consider expectations only represent the probability of an event occurring, whilst others such as Oliver (1980) and Churchill and Surprenant (1982) considered expectations consist of the probability of an event occurring together with an evaluation of whether the event will be good or bad.

For example, in a logistics context, will a scheduled product delivery actually happen and if so, will the delivery firm provide the correct number of products ordered in an

undamaged state? This latter evaluative component might be considered a construct of event and therefore service quality. Spreng, MacKenzie and Olshavsky believed this evaluative component leads to biased probabilities of the impact of expectations due to different subjective considerations by different respondents, i.e. one item damaged in the above example might not be as 'bad' for one firm as it might be for another firm.

Spreng, MacKenzie and Olshavsky therefore defined expectations as "beliefs about a product's attributes or performance at some point in the future" (1996 p.16). However Oliver's later definition of expectations as "a prediction, sometimes stated as a probability or likelihood, of attribute or product performances at a specific performance level" (1997 p.28) does not seem much different. Moreover, the notion that a repeat purchase situation in a relationship context is a pre-purchase situation dependent upon expectations being fulfilled adds to the confusion regarding this construct. This construct has also suffered from lack of discussion concerning the importance of a relationship context (Tikkanen and Alajoutsijärvi 2002).

However, the consensus is expectations are based on the probability of an event occurring around some performance-related criteria. Such criteria may necessarily be subjective in order to establish the desirability of an event's outcome. Further, Johnson and Mathews argued that "whatever conceptualization of service quality proves to be correct it is clear that expectations have an important role to play" and that to "evaluate fully the quality of a service expectations need to be measured" (1997 p.293).

A customer's attitude is shaped by their antecedent expectations and perceptions of a firm's performance and event quality. The temporal notion of a previous experience or experiences suggests the importance of event interactions between actors in a customer-supplier dyadic setting. Marketers have long used social and psychological research in attitudes to develop expectancy-value models for consumer behaviour (Ajzen and Fishbein 1980). Fishbein and Ajzen have described an attitude as "a learned predisposition to respond in a consistently favorable or unfavorable manner

with respect to a given object” (1975 p.6). Figure 4.1 presents their schematic framework where a consumer’s beliefs about various objects, or products in a business context, form such an attitude. This attitude then leads to a set of intentions towards various objects that results in behaviour change. In the case of consumer behaviour a favourable response, from a firm’s perspective, would be for a consumer to purchase the product under consideration. This framework is iterative where feedback either reinforces or discounts previously held beliefs.

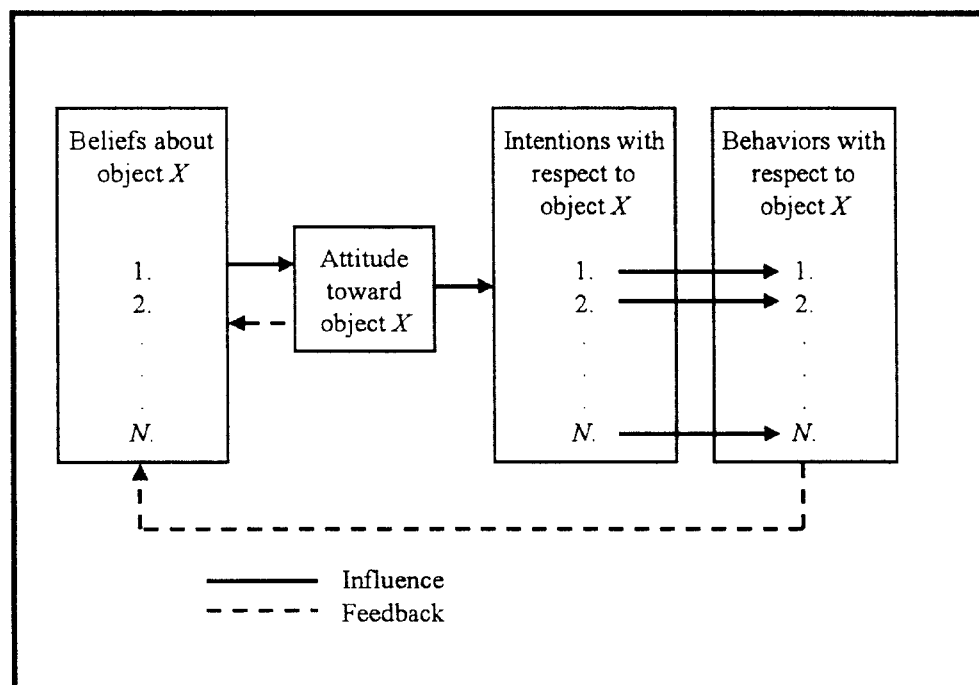


Figure 4.1: Conceptual Framework of Beliefs, Attitudes, Intentions and Behaviours

(Source: Fishbein and Ajzen 1975 p.15)

Innis and La Londe (1994) extended this model in a logistics context and argued that attitudes can be measured using multi-attribute models that are a function of both importance and performance. Their mathematical notation (1994 p.9) is of the form:

$$A_{jk} = \sum(I_{ik} * B_{ijk})$$

where: i = an attribute or product characteristic
 j = a brand
 k = a customer or respondent
 such that: A_{jk} = customer k’s attitude score for brand j
 I_{ik} = the importance weight given attribute i by customer k
 B_{ijk} = customer k’s belief as to the performance on attribute i by brand j

Cronin and Taylor (1992, 1994) have also supported this importance-performance measure in the service quality literature. In services where there are no tangible product characteristics, attributes may be replaced by intangible variables of customer service. Similarly, variables of customer service are not necessarily representative of a brand. In this context, the customer service supplier may replace the brand. An amended notation would thus provide an attitude index of a customer towards a supplier's customer service offerings based on one specific performance event. Such an event might be critical in the development of the attitude index and hence future beliefs and expectations.

Events have been considered as 'critical incidents' in psychology. Flanagan defined a critical incident as "any observable human activity that is sufficiently complete in itself to permit inferences and predictions to be made about the person performing the act. To be critical, an incident must occur in a situation where the purpose or intent of the act seems fairly clear to the observer and where its consequences are sufficiently definite to leave little doubt concerning the effects" (1954 p.327). Flanagan developed the critical incident technique (CIT) as "a set of procedures for collecting direct observations of human behavior in such a way as to facilitate their practical usefulness in solving practical problems and developing broad psychological principles" (ibid.). CIT procedures consist of collecting qualitative data to analyse facts behind an incident or series of incidents. The requirement for CIT arose in World War II to determine why candidates selected to be pilots failed to learn to fly. Marketers, particularly in service quality have adopted CIT. Lewis argued it is "essential to understand the concept of service encounters, also referred to as moments of truth or critical incidents" (1993 p.4).

Thus, consideration of both attitudes and critical events as partial determinants of customer satisfaction is useful for the customer-supplier dyad in this study. Oliver provided "the most current version of disconfirmation theory... called the expectancy-disconfirmation with performance model" (1997 p.121) reproduced in Figure 4.2. In this model expectations and performance are correlated and provide a calculated disconfirmation. This disconfirmation is thus objective and reflects a

customer's attitude towards an event. The outcome is a subjective interpretation that becomes a direct antecedent to satisfaction. Both objective and subjective disconfirmation mediate satisfaction in a single event.

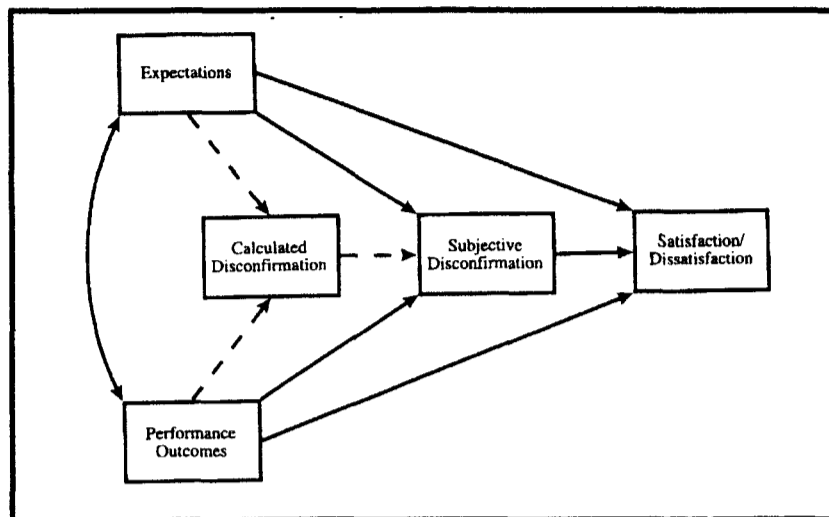


Figure 4.2: Expectancy-Disconfirmation with Performance Model
(Source: Oliver 1997 p.120)

An ongoing business relationship contains more than one event that suggests continual modification of expectations, as well as the establishment of a baseline expectation level, might not be affected by one bad event. This also suggests two different types of satisfaction, one based on an independent and discrete event or transaction and one based on overall satisfaction received from a series of events or transactions.

Spreng, MacKenzie and Olshavsky (1996) considered overall satisfaction during an event is influenced by both product attribute satisfaction and information satisfaction. They decomposed Oliver's model and segregated information to investigate its importance as an independent decision factor particularly with respect to performance. Consumers may enjoy high levels of information satisfaction but low levels of attribute satisfaction, e.g. "owners of new Volvos who are honestly told that repair parts may be hard to get (or expensive) in some areas" (1996 p.28). Thus, information may be considered a factor of a service offering, as discussed in Chapter Two, or in its own right in the marketing mix variable of promotion.

Voss, Parasuraman and Grewal (1998) examined price as another factor of satisfaction based on performance and expectations. They found "performance

expectations have a significant effect on performance perceptions and satisfaction only when price and performance are consistent” (1998 p.55). These two studies suggest that the marketing mix variables other than product, or service as the augmented product, affect satisfaction, and suggest all aspects of the marketing mix need to be considered when designing and evaluating customer satisfaction research.

Jones and Suh (2000) recognised that transaction-specific satisfaction and overall satisfaction have received little empirical investigation, and conducted an empirical study of transaction and overall satisfaction as predictors of repurchase intentions. They found that overall satisfaction was a marginally better predictor, but cautioned that their study had several limitations: a limited number of measures, a small, highly homogeneous and non-random sample of students at one university, and only one service category, a haircut.

Their study supported findings by Anderson and Sullivan (1993) that found effects of an event disconfirmation to be marginal. Jones and Suh considered future research should examine relationships among transaction-specific satisfaction, overall satisfaction, service quality and customer-supplier relationship criteria such as trust and commitment. This study includes all these relationships in a logistics context and the various constructs are discussed in Chapters Six and Eight.

Anderson and Sullivan (1993) and Anderson, Fornell and Lehman (1994) examined satisfaction on a macro- or country level. Anderson and Sullivan (1993), investigating over 22,000 customers of 114 major consumer companies in Sweden, found satisfaction increased with disconfirmation and perceived quality, the latter replacing expectations as an antecedent. Anderson, Fornell and Lehman (1994) examined the financial performance of the 77 Swedish major consumer companies and customer satisfaction of over 25,000 of their customers. They found a positive correlation between customer satisfaction and economic returns for the firm.

4.2.3 Customer Satisfaction and Logistics

The logistics literature concerning customer satisfaction is not as expansive as it is for customer service, however there have been a few studies that have either examined customer satisfaction in isolation or contain the words 'customer satisfaction' in the title. Nagel and Cilliers presented a monograph on customer satisfaction in logistics with two objectives: "to invite comments from other researchers, and to stimulate academic debate on the subject" (1990 p.3). They recognised that few attempts had been made to investigate customer satisfaction compared to customer service. The monograph is theoretical with no empirical study, and also has a practitioner approach. The basic premiss was that "the focus should be on maximising total product value to the customer" (1990 p.5) whilst a second premiss was "that customer satisfaction of external customers is interdependent on the satisfaction of internal customers" (1990 p.6). Their arguments were based on Porter's Value Chain, discussed in Chapter Five, and also drew upon works of Oliver in satisfaction and Parasurman, Zeithaml and Berry in service quality.

Nagel and Cilliers defined customer service as "a deed, a performance or an effort, which if added to a product, increases its value or utility to the customer" and customer satisfaction as "an outcome of purchase and use, resulting from a buyer's comparison of the rewards and costs of the purchase in relation to the anticipated consequences" (1990 p.4). Their monograph contributed by collecting and synthesising literature available then on customer service and satisfaction from both the logistics and marketing disciplines. However it was based on enterprise satisfaction, i.e. profitability, did not add any new theoretical or conceptual arguments, and its later chapters on operationalising strategies within a firm were prescriptive.

Innis and La Londe (1994) studied customer service as an influence on customer satisfaction and market share through customer loyalty and repurchase intentions. They did not define customer satisfaction but rather introduced it as a self-evident construct and output of the marketing concept which is "essentially the satisfaction of customer needs through integrated marketing with the intent to satisfy the

customer while earning a profit” (1994 p.2). Their contribution is to the customer service debate.

Dresner and Xu (1995) examined how customer service affected customer satisfaction and corporate performance in the airline industry. They examined only three measures for customer service: on-time performance, mishandled baggage, and ticket over-sales. Their single measure for customer satisfaction was the number of customer complaints whilst their single measure for corporate performance was the operating revenue to operating expenses for airline carriers. This research design enabled Dresner and Xu to use secondary data for all these measures, but could have been a more rigorous design, study and analysis.

They found increasing satisfaction, i.e. reducing the number of complaints regarding the three customer service variables, improved corporate performance. Dresner and Xu’s study was useful in establishing relationships between these three elements. However, it was “a preliminary effort on the examination of the links” and only a “case study of a single service industry – the airline industry” (1995 p.37) and they called for further work in other service industries.

Sharma, Grewal and Levy (1995) presented a conceptual framework that discussed “the effect of the logistics department... and policy on customer satisfaction and corporate profitability” (pp.14-15). They proposed a customer satisfaction model presented in Figure 4.3 that utilises expectancy-disconfirmation constructs developed by Churchill and Surprenant (1982) and Oliver and Swan (1989) in a logistics purchase process. They integrated these constructs in the pre-purchase and post-purchase stages proposed by La Londe and Zinszer (1976). Their contribution was useful in contextualising these constructs in the logistics discipline however they did not consider existing conceptual models in customer service, such as the Mentzer, Gomes and Krapfel (1989) model discussed in Chapter Seven, to establish performance expectations within their framework.

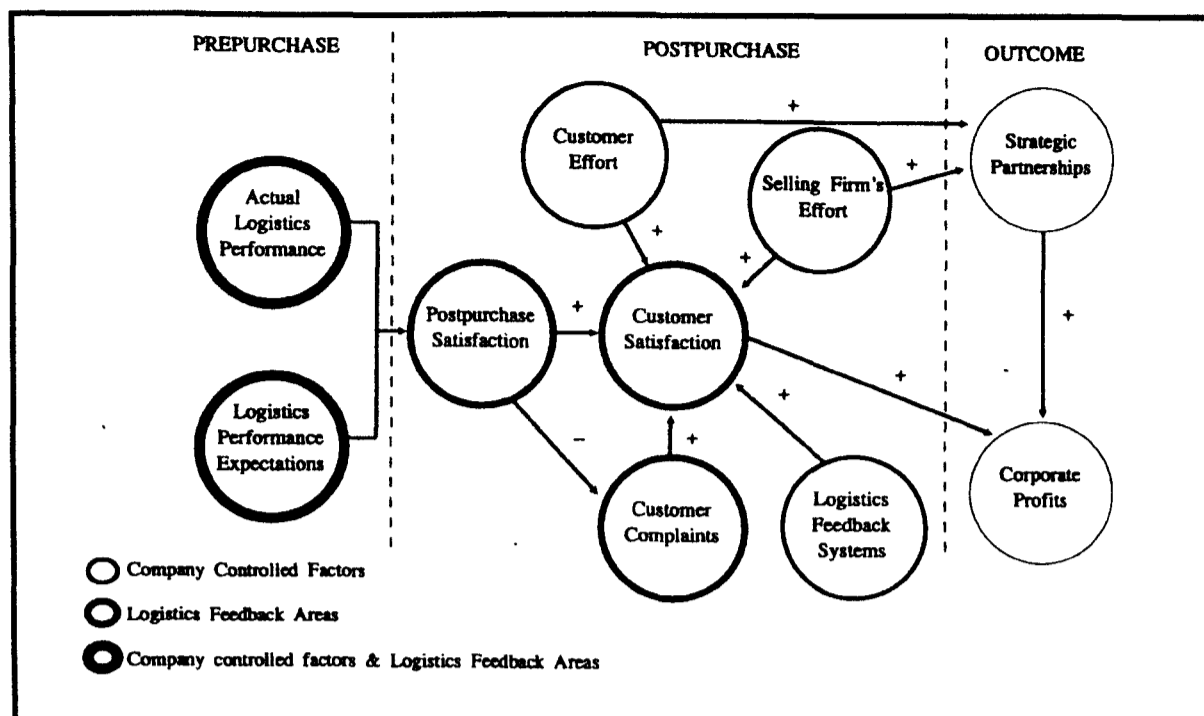


Figure 4.3: Proposed Customer Satisfaction Model in Logistics

(Source: Sharma, Grewal and Levy 1995 p.4)

Williams Walton (1996) investigated current and future satisfaction in logistics partnerships. She did not define satisfaction and utilised established partnership dimensions of planning, asset specificity, and interdependence to determine levels of satisfaction. Whilst contributing to supply chain partnership research, this empirical study did not examine or utilise any customer satisfaction constructs, notwithstanding supply chain partners could be considered as internal customers to each other.

Schellhase, Hardock and Ohlwein (1999, 2000) looked at customer satisfaction provided by suppliers to retailers in the food processing industry. Although retailers are outside the scope of this study, this article is useful for its discussion of satisfaction on a macro level. Schellhase, Hardock and Ohlwein distinguished between three concepts for measuring satisfaction: objective procedures (firm sales, warranty claims) versus subjective procedures (attribute or event), static (cross-sectional) versus dynamic (longitudinal), and macro (economic system, sector) versus micro (enterprise, individual products).

Their macro measures of retail activities included “product range, conditions and prices, information and advice, packaging and logistics, marketing support, contact personnel, and field personnel” (1999 p.421, 2000 p.111). Their data analysis of

German food retailers yielded competent contact personnel as the most important dimension affecting retailer satisfaction, thus suggesting “the importance of a relationship based on trust and close cooperation between the two parties” (1999 p.427, 2000 p.116). The importance of relationships in logistics dyads is further discussed in Chapter Six.

Lastly, Emerson and Grimm (1999) investigated firm and environmental variables on customer satisfaction whilst holding customer service constant. This empirical study used the expectancy-disconfirmation framework and four measures of customer satisfaction in a sample of power tool resellers. Supplier flexibility and product line sales growth were found to be significant in reseller satisfaction. Emerson and Grimm contributed by examining the effect of these variables on customer satisfaction, however did not examine the effect of any customer service changes.

4.2.4 Prescriptive Techniques in Customer Satisfaction

Empirical studies of customer service in logistics have considered customer satisfaction but not in a rigorous or theoretical manner, only as a self-evident output of customer service. These studies will be discussed in Chapter Seven. There is also some customer satisfaction literature proposing prescriptive techniques for practitioners and managers to use within their firms.

Some of these studies indicate firms may not understand the concepts of logistics, customer service and customer satisfaction as they apply to their customers and their customers’ needs (Langley 1992, Donaldson 1994, Donaldson and Fletcher 1994, Gilmour, Borg, Duffy, Johnston, Limbek and Shaw 1994, Johns 1999, Brewer 2001). Firms need to understand these concepts in order to meet their customers’ needs and thus enhance their own profitability, as discussed in Chapter Five. However there is disparity in the literature regarding the correct operationalisation of these concepts for firms and practitioners.

Although he equated customer satisfaction and service quality, Selin proposed the following four-step process for measuring customer satisfaction:

- identify what quality service means to the firm,
- validate that perception with the firm's customers,
- determine the customers' level of satisfaction required to meet their needs, and
- align the firm's operations to meet those needs (1988 p.66).

Selin's process is an early example of a prescriptive technique and includes a step to solicit the customer's views, similar to Gap 2 in the PZB service quality model discussed in section 4.3. Selin warned against combining steps 2 and 3 since "asking your customers for their perception of what their expectations are is totally different from asking them how well you're doing in meeting your perception of their needs" (1988 p.66). The audit process shown in Figure 3.3 (Christopher 1992, Christopher and Yallop 1992) could be a first-step in operationalising Selin's process.

Müller argued customer satisfaction leads to greater profitability, although he did not empirically test his hypothesis, and he proposed an eight-step framework for customer satisfaction management:

- define customer satisfaction,
- build customer satisfaction strategy,
- create an organisational structure
- value the firm's staff's customer satisfaction commitment,
- improve satisfaction-related skills at pivotal jobs,
- treat employees as customers
- share the customers satisfaction vision, and
- exploit the profit potential from satisfied customers by building relationships with them over a total customer ownership cycle (1991 p.211).

Müller's approach is firm-centred and does not consider customer input but does consider the role of employees and staff in understanding and delivering on the firm's goals. This latter point is an important feature in service quality discussed in the next section.

Perkins proposed three steps for measuring customer satisfaction: "determining the dimensions on which the products and services can vary, asking customers to rate

their satisfaction with one or more companies on those dimensions, and asking customers for overall satisfaction ratings for the companies” (1993 p.248). Perkins empirically examined an industrial supplier’s salesforce, distributors and its customers’ buyers on their perceived satisfaction across ten product and service characteristics. The study used a three-point scale of satisfaction consisting of very satisfied, somewhat satisfied and somewhat dissatisfied. This scale is incomplete, as it does not tap into neutral or very dissatisfied measures. However, Perkins noted it was “only a first step” and considered the results should be integrated with the firm’s engineering characteristics “using the ‘House of Quality’ approach” in order to improve overall firm quality (1993 p.253).

Lapidus and Schibrowsky also proposed four stages to examine customer satisfaction using the House of Quality approach:

- aggregate complaints using the critical incident techniques to identify problems,
- identify common and related causes of problems to evaluate the problems,
- develop alternative service design solutions using the House of Quality matrix, and
- implement solutions and measure/evaluate performance and satisfaction, and adjust strategy and tactics as required (1994 p.51).

As discussed in Chapter Three, Lapidus and Schibrowsky based their process on customer complaint analysis and thus did not consider other aspects of the expectancy-disconfirmation framework. Their work does however introduce the notion of complaint analysis and CIT as prescriptive techniques.

The House of Quality is a matrix for examining service attributes against operational characteristics, but Lapidus and Schibrowsky recognised it only “provides a static picture” whilst “service must be viewed as a long-term process” (1994 p.53). The implementation of a House of Quality process is outside the scope of this study and is therefore not considered further.

Jones and Sasser (1995), investigating customer satisfaction and loyalty, discussed why satisfied customers defect. They found “completely satisfied customers are more

loyal than merely satisfied customers” and that “the link between satisfaction and loyalty” is not a simple, linear relationship but almost an exponential curve (1995 p.96). Accordingly, they proposed a three-step process for firms to implement to determine whether their customers are merely or completely satisfied

make the measurement of customer satisfaction and loyalty a priority and ensure the process is unbiased, consistent, broadly applied, and able to capture and store information on individual customers, create a curve by plotting individual customer responses and compare their curve with the industry curves provided, and determine the most appropriate strategies for raising customer satisfaction (1995 pp.96-97).

Jones and Sasser’s research introduced concepts of loyalty and therefore long-term relationships as a consequence of loyalty, however it suffers from a lack of detail regarding research methodology and rigour that limits a proper critique.

Kristensen (2000) discussed a possible benchmark for European firms based on the American Customer Satisfaction Index (ACSI) used by Anderson and Sullivan (1993) and Anderson, Fornell and Lehman (1994). The ACSI is a “national economic indicator of customer satisfaction with the quality of goods and services available to household consumers in the United States” and reports “indices on a 0-100 scale at the national level, for seven economic sectors, 34 industries and nearly 200 individual companies or agencies” (University of Michigan Business School 2002).

In addition to the company-level satisfaction scores, the ACSI produces indices for factors of customer satisfaction, its outcomes and the interrelationship among these variables. The measured companies, industries and sectors are “broadly representative of the U.S. economy serving household consumers and constitute 30-40% of U.S. Gross Domestic Product. Data are collected from telephone surveys of random samples of 50,000 per year at the individual consumer level, with indices for a company's customers aggregated to produce company-level, sector and national indices” (ibid.). The ACSI is useful as regards consumer research but is not applicable for this study which examines customer-supplier interactions.

Kristensen's benchmark is the European Customer Satisfaction Index (ECSI). In its initial trial in 1999 eleven European Union countries, excluding the UK, participated in the process, and only service industries were included. The average ECSI score in 1999 was 65% out of a maximum of 100 (Kristensen 2000), compared to an average of 72% in 1999 on the ASCI (University of Michigan Business School 2002).

The ECSI model is shown in Figure 4.4. It uses the expectancy-disconfirmation framework and also includes loyalty as an output of customer satisfaction. Kristensen noted that perceived value, customer satisfaction and loyalty are endogenous variables, but as it is a commercially sensitive model he did not elaborate on the measures used. Nonetheless, it is useful for research design considerations in this study as discussed in Chapter Five.

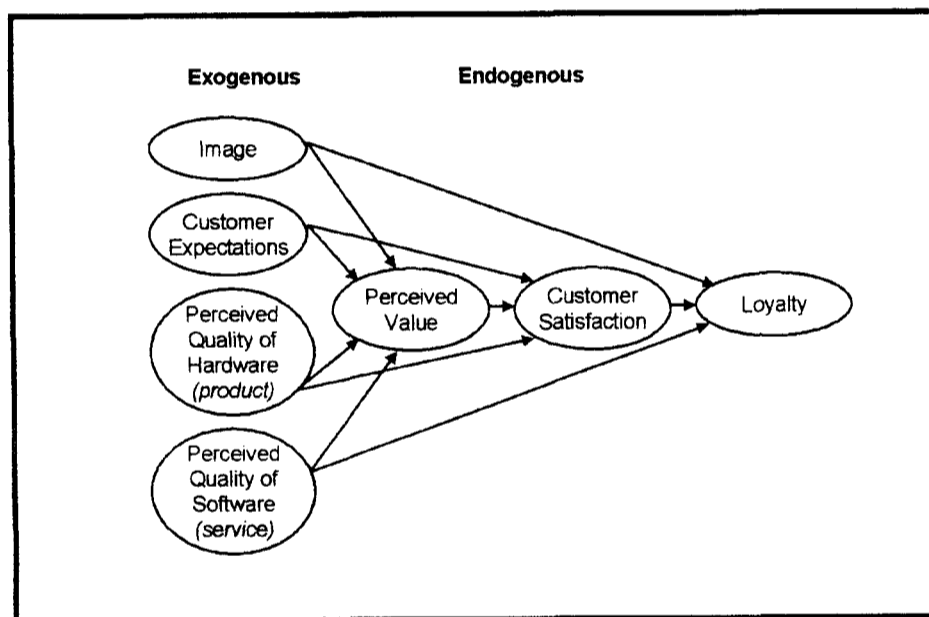


Figure 4.4: The European Customer Satisfaction Index Model
(Source: Kristensen 2000)

The five prescriptive studies discussed in this section offer interesting but diverse frameworks. However, there are several important themes regarding customer satisfaction that are applicable to both researchers and practitioners:

1. seeking responses of customers and supplier's employees to establish important measures,
2. conducting satisfaction research in conjunction with other functional areas that may have an impact,
3. considering quality measures as surrogates for satisfaction if no direct measures are available, and

4. considering loyalty and relationships as outcomes of satisfaction.

As a caution, managers should not believe that meeting or exceeding expectations alone satisfies customers, or that managing expectations by lowering them to produce higher customer satisfaction results in accurate effects of expectations on a service experience (Spreng and Mackoy 1996). Thus, these themes should be utilised in concert with other management theory and techniques to be effective.

4.3 SERVICE QUALITY

4.3.1 Concept of Service Quality

The different characteristics of services compared to tangible products, or goods and the concept of logistics activities being services were discussed in Chapter Two, whilst linkages of service quality to customer service and satisfaction were introduced in Chapter Three and section 4.2. This section considers service quality (SQ) and its implications for this study in terms of customer service and satisfaction related to logistics activities.

Zeithaml, Parasuraman and Berry argued that the different characteristics of services “pose vexing problems for service marketers that are not faced by goods marketers” and that “service marketing problems require service marketing solutions – the strategies developed from experience in goods marketing are often insufficient” (1985 p.33). They recognised that research in services would have to be broadened beyond “areas not normally classified as ‘marketing’ (e.g. facilities design)” and “enter a new phase of empirical work that integrates various disciplines and various service industries” (1985 p.44).

Lewis (1993) noted that quality in the service sector had been of interest for two decades. Such interest developed from the emergence of Total Quality Management (TQM) in manufacturing pioneered in Japan by Deming, Juran and Taguchi (see Peters and Waterman 1982, Lewis 1993, Slack, Chambers, Harland, Harrison, and Johnston 1995, Johnson, and Scholes 1999, Jobber 2001). Lewis argued that

“customer service, and service quality, is now a focus for any corporate marketing strategy (1993 p.4). That focus enables firms to derive a competitive advantage and improve profitability will be demonstrated in Chapter Five.

These foregoing arguments apply to suppliers and logistics service providers with respect to logistics service activities. Indeed, Karmarkar (1996) argued work in SQ by Parasurman, Zeithaml and Berry, hereinafter termed PZB, is appropriate for integrative research in marketing and operations management. Karmarkar remarked such integration is necessary as “the tightly coupled supply chain structure cannot naturally be decomposed into marketing issues and operations issues” and necessary to “understand the valuation a given customer places on a particular product (and on time, quality, delivery)” (1996 p.130).

Karmarkar’s call for cross-functional interactions is a feature of this study, which considers the disciplines of marketing and logistics to be intertwined. However Karmarkar’s references did not include any work undertaken in the logistics discipline and he therefore does not consider the extant theoretical and empirical work. Notwithstanding, the work done by PZB represents a point of departure for SQ and is discussed next.

4.3.2 Service Quality Models and the SERVQUAL Instrument

Following on from Zeithaml, Parasuraman and Berry’s discussions of problems in services marketing (1985), PZB (1985) developed a conceptual model of SQ shown in Figure 4.5. The foundation of SQ and PZB’s model is Oliver’s expectancy-disconfirmation with performance model of satisfaction (Brady and Cronin 2001), that examines shortfalls or ‘gaps’ affecting service performance and a consumer’s perception of service performance compared to their a priori expectations. Sources of expectations are word-of-mouth from others, personal needs and past experience however PZB argued that “consumers typically rely on experience properties when evaluating” a firm’s SQ (1985 p.48). PZB also proposed ten determinants of SQ used by consumers in evaluating a firm’s SQ based on their experiences: “reliability,

responsiveness, competence, access, courtesy, communication, credibility, security, understanding/knowing the customer and tangibles” (1985 pp.46-48).

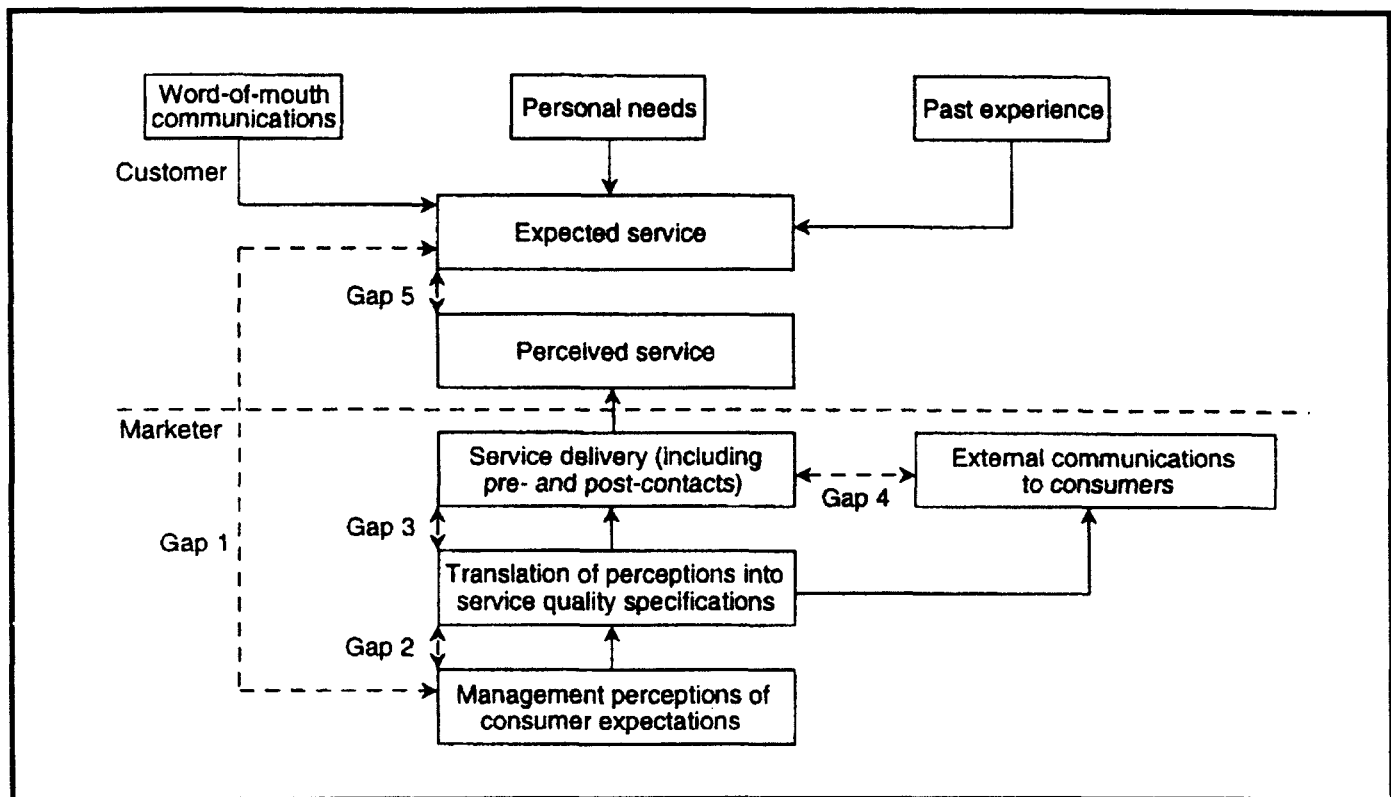


Figure 4.5: A Conceptual Model of Service Quality

(Source: Parasuraman, Zeithaml and Berry 1985 p.44)

The consumer forms resultant attitudes and behaviour of perceived SQ through Gap 5, the difference between expected service (ES) and perceived service (PS).

Parasurman, Zeithaml and Berry proposed that:

- (a) When $ES > PS$, perceived quality is less than satisfactory and will tend toward unacceptable quality, with increased discrepancy,
- (b) When $ES = PS$, perceived quality is satisfactory,
- (c) When $ES < PS$, perceived quality is more than satisfactory and will tend toward deal quality, with increased discrepancy between ES and PS (1985 pp.48-49)

There are four potential gaps, or discrepancies, related to how a firm perceives and provides SQ to consumers. Gap 1 is the discrepancy between consumer expectations and the firm’s perception of these expectations. Gap 2 is the discrepancy between the firm’s perceptions of consumer expectations and the firm’s establishment of SQ specifications. Gap 3 is the discrepancy between the firm’s establishment of SQ specifications and its actual service delivery or provision. Finally, Gap 4 is the discrepancy between the firm’s actual service delivery or provision and external communications about the service to consumers.

PZB (1985) further proposed that Gap 5, associated with the consumer, is a function of the four gaps associated with the firm:

$$\text{Gap 5} = f(\text{Gap 1, Gap 2, Gap 3, Gap 4})$$

In terms of the expectancy-disconfirmation paradigm, a neutral or positive Gap 5 (i.e., $PS \geq ES$) indicates a consumer's expectations are confirmed or positively disconfirmed respectively, and they are satisfied with the firm's SQ. A negative Gap 5 (i.e., $ES > PS$) indicates a consumer's expectations are negatively disconfirmed, and they are dissatisfied with the firm's SQ. Satisfaction thus becomes a function of SQ and a function of the four gaps associated with the firm. Gap 5 thus becomes a measure of both SQ and satisfaction.

Firms must determine what level of customer service and SQ to provide to customers, given cost trade-offs associated with them. However, they have to be able to measure customer expectations and perceptions to make such a determination. Such measurement is made all the more difficult when customer expectations operate in a range called the 'Zone of Tolerance' (Zeithaml, Berry and Parasuraman 1993). This concept contextualises SQ theory as customers will vary expectations due to the heterogeneous nature of a service experience. The 'Zone of Tolerance' represents a level of quality extending between a desired service level, what the customer actually wants, and an adequate service level, what the customer is willing to accept.

PZB (1988) developed an instrument to obtain such measurements, called SERVQUAL. The methodology used to develop SERVQUAL came from their conceptual model discussed above and procedures recommended by Churchill (1979) for developing and empirically testing marketing scales. SERVQUAL is a multi-item scale consisting of 22 items across five dimensions (PZB 1988, Zeithaml, Parasuraman and Berry 1990). The five dimensions were refined through qualitative research from the ten determinants discussed above, although they include all ten determinants, and PZB remarked "SERVQUAL has only five distinct dimensions"

(1988 p.24). The dimensions are tangibles (4 scale items), reliability (5 items), responsiveness (4 items), assurance (4 items) and empathy (5 items).

Each item is measured with a seven point Likert scale (Likert 1932, Nunnally and Bernstein 1994, Hair, Anderson, Tatham and Black 1995). Scale anchors are the labels ‘Strongly Agree’ and ‘Strongly Disagree.’ Respondents are asked to complete item statements in batteries for expectations and company-specific perceptions. For example, an expectation statement is (Zeithaml, Parasuraman and Berry 1990 p.181):

	Strongly Disagree		Strongly Agree
8. Excellent ___ companies will provide their services at the time they promise to do so.	1...	3...	7

The same statement recast as a perception statement is (Zeithaml, Parasuraman and Berry 1990 p.185):

	Strongly Disagree		Strongly Agree
8. XYZ Co. provides its services at the time it promises to do so.	1...	3...	7

The twenty-two items in each battery are summed and the difference taken between the expectation and perception sums to calculate an overall Gap 5 or SERVQUAL score (PZB 1988, Zeithaml, Parasuraman and Berry 1990). The overall SERVQUAL score is unweighted “because it does not take into account the relative importance that customers attach to the various dimensions” (Zeithaml, Parasuraman and Berry 1990 p.176).

However, an importance weighting scale for the five dimensions was included in a later refinement so that a weighted SERVQUAL score can be calculated (Parasuraman, Berry and Zeithaml 1991). A SERVQUAL score can also be calculated across each dimension to assess a firm’s “quality of service along each of the five dimensions” (Zeithaml, Parasuraman and Berry 1990 p.176).

Coefficient alpha, sometimes termed Cronbach's alpha, was used to purify the scale items (Cronbach 1951, Churchill 1979, PZB 1988, Nunnally and Bernstein 1994, Hair, Anderson, Tatham and Black 1995). EFA and analysis of variance (ANOVA) were used to check construct validity and reliability with respect to the five dimensions (Churchill 1979, PZB 1988, Child 1990, Nunnally and Bernstein 1994, Hair, Anderson, Tatham and Black 1995). PZB posited SERVQUAL has "good reliability and validity that retailers/companies can use to better understand service expectations and perceptions of consumers/customers and, as a result, improve service" (PZB 1988 p.30, Zeithaml, Parasuraman and Berry 1990 p.175, Parasuraman, Berry and Zeithaml 1991 p.445). They also considered SERVQUAL and its five dimensions are "applicable across a broad spectrum of services" (ibid.). Yet there has been substantial academic criticism of SERVQUAL that is discussed next.

4.3.3 Criticisms of SERVQUAL

The SERVQUAL instrument has been criticised on conceptual, methodological and interpretative grounds by a number of authors (Carman 1990, Babakus and Boller 1992, Cronin and Taylor 1992 and 1994, Brown, Churchill and Peter 1993, Teas 1993 and 1994). PZB have either provided rebuttals or refined the instrument as a result of these direct dialogue criticisms (Parasuraman, Berry and Zeithaml 1991 and 1993, PZB 1994).

Other authors have provided their own criticisms and some have also provided useful summaries of the dialogue and issues between the critics and PZB, (Lewis 1993, Smith 1995, Buttle 1996, Lam and Woo 1997, Dabholkar, Shepherd and Thorpe 2000, Lee, Lee and Yoo 2000, Flynn and Percy 2001). There are six major criticisms of SERVQUAL in this literature: the methodological paradigm on which it is based, the use of expectations and perceptions scores, the instrument scales, the reliability and validity of the instrument, the latent dimensions derived from the manifest items, and the longitudinal replication of the instrument.

Paradigmatic Criticisms: SERVQUAL has been criticised as being inappropriately based on the expectancy-disconfirmation paradigm rather than an attitudinal paradigm (Carman 1990, Buttle 1996, Lee, Lee and Yoo 2000). SERVQUAL thus measures satisfaction, not SQ, and is therefore difficult to reconcile with attitudinal models (Cronin and Taylor 1992 and 1994, Smith 1995, Lam and Woo 1997). Such 'inappropriate development' contradicts SQ's original conceptualisation as an attitude by PZB.

PZB (1994) claimed the critics ignored or discounted prior theoretical work in the SQ and satisfaction literature. Whilst some critics cited Oliver's work on satisfaction, no aforementioned critic considered attitudinal work by Ajzen and Fishbein, Innis and La Londe or Spreng, MacKenzie and Olshavsky, discussed in section 4.2, that developed expectancy-value models from prior attitude research. SERVQUAL has also been criticised for not building on literature from economics, statistics and psychology, and PZB have been criticised for taking an inductive approach from historical observation to general theory without following a proper scientific or deductive approach (Buttle 1996).

However, the critics appear to have misunderstood the inductivist-deductivist methodological approach used by PZB that will be further discussed in Chapter Eight. The development of the SQ model and SERVQUAL instrument by PZB contained elements from both sides of the approach. PZB initially acquired 'facts through observation' from qualitative research to determine important items and dimensions for universal 'laws or theories' about SQ. Subsequently, they used recommended procedures from Churchill (1979) to develop and test a generic SERVQUAL instrument for making 'predictions and explanations' of SQ in various firms. Thus, PZB's methodological approach appears sound as even the source of their recommended procedures did not criticise them on such grounds (Brown, Churchill and Peter 1993) but it may suffer from lack of clarity and flexibility. This has led to psychometric and statistical criticisms discussed next.

Expectations versus Performance: SERVQUAL has been criticised regarding the difference or disconfirmation scores between the expectations and perceptions batteries used to calculate Gap 5. Difference scores are considered psychometrically unreliable due to problems with discriminant validity, spurious correlations and variance restriction (Brown, Churchill and Peter 1993, Smith 1995, Dabholkar, Shepherd and Thorpe 2000, Lee, Lee and Yoo 2000). Difference scores also may not add any information beyond battery scores of perceptions (Babakus and Boller 1992, Buttle 1996, Cronin and Taylor 1992 and 1994). Lastly, the meaning of Gap 5 scores may not indicate respondents equally perceive SQ or provide evidence of an ideal point attitudinal model (Teas 1993 and 1994).

Cronin and Taylor (1992) empirically compared SERVQUAL scores to a performance score-only instrument termed SERVPERF and suggested it is superior in terms of construct validity and operational efficacy. Empirical analysis of expectations battery scores has also provided evidence of psychometric unreliability as scores have tended to be highly skewed, indicating possible social desirability response bias (Brown, Churchill and Peter 1993, Smith 1995, Buttle 1996). These criticisms are meaningful and cogent however discontinuing the use of expectations scales would eliminate a benchmark required by firms when using the SERVQUAL instrument as well as importance measurement of individual items.

Scales: SERVQUAL's seven point Likert scales have been criticised as containing too many points and insufficient labelling that might lead to respondent confusion, misinterpretation of intermediary point meaning and overuse of the anchor points (Lewis 1993, Buttle 1996, Flynn and Percy 2000). Further, PZB's initial scale data collection was at the interval data level whilst analysis was conducted at the ordinal data level using factor analysis (ibid.).

However, these arguments are addressed as follows, as well as in Chapter Eight. The use of five point Likert scales reduces respondent confusion (Buttle 1996) and is statistically more optimal than seven point scales (Lissitz and Green 1975, Schertzer and Kernan 1985). Hence, five point scales are adopted for use in this thesis.

Moreover, ordinal data can be treated as interval data without a great loss of statistical significance and accuracy (Traylor 1983, Schertzer and Kernan 1985).

Reliability and Validity: SERVQUAL has been criticised for insufficient rigour regarding reliability and construct validity achieved across sub-scales or dimensions in empirical tests by PZB and their critics (PZB 1988, Carman 1990, Babakus and Boller 1992, Cronin and Taylor 1992, Brown, Churchill and Peter 1993, Teas 1993, Flynn and Percy 2000). Reliability was measured with coefficient alpha, which is an internal consistency measure between 0.0 and 1.0 (Cronbach 1951, Carmines and Zeller 1979, Lam and Woo 1997). Alpha values across all studies ranged from 0.52 to 0.93 (Lam and Woo 1997). Carmines and Zeller (1979) and Nunnally and Bernstein (1994) recommend values of 0.80 or higher for scale items to be reliable, whilst Hair, Anderson, Tatham and Black (1995) recommend 0.70 and Malhotra and Birks (2000) recommend 0.60.

Lam and Woo (1997) performed test-retest studies using SERVQUAL over a one year period and found internal consistency measures to be satisfactory although below values of 0.80, thus issues of actual and appropriate values of reliability for SERVQUAL remain unsettled. Construct validity was determined by factor analysis loadings of battery items onto the five dimensions or sub-scales developed by PZB and the total variance extracted by the five factors. Factor loadings ranged from 0.38 to 0.86 across all studies. Hair, Anderson, Tatham and Black (1995) recommend minimum loadings of 0.30 however also note that values of 0.50 are practically significant.

Variance extracted by the factors ranged from 56% to 75% across all studies. Hair, Anderson, Tatham and Black (1995) recommend minimum variance extracted for a construct of 50% however modified scales used by various PZB critics tended to produce higher levels of variance extracted (Buttle 1996). Thus, whilst the original PZB empirical studies meet most of the recommended criteria for reliability and validity for their SERVQUAL instrument, the psychometric measures are open to interpretation. PZB acknowledged researchers could add or delete items to the basic

SERVQUAL skeleton, however they insisted that SERVQUAL be used in its entirety as much as possible (Parasuraman, Berry and Zeithaml 1991, Smith 1995, Buttle 1996).

This insistence may be driven by PZB's need to claim SERVQUAL is a generic and generalisable instrument, however it limits the ability of researchers to advance the instrument and SQ theory. Construct validity can be supported but can never be proven, and later work may reinterpret or suggest new findings (Spector 1992). PZB's rigidity over SERVQUAL's scales have not produced the most rigorous instrument possible, and the need to reconsider its measures is evidenced by the following discussion about its five dimensions.

Dimensions: SERVQUAL has been criticised for the composition and number of dimensions it contains. Empirical tests by PZB's critics and others with a modified instrument have yielded anywhere from one to nine dimensions (Buttle 1996), whilst some researchers have failed to identify PZB's five dimensions (Smith 1995, Lam and Woo 1997). These researchers modified SERVQUAL to reflect theoretical or industrial conditions particular to their research situation.

Contextual instability of the five dimensions has also appeared across certain industries (Carman 1990, Buttle 1996), and some researchers have suggested that SERVQUAL may not travel well across different cultures (Lewis 1993, Buttle 1996). Also, the average four or five items per SERVQUAL dimension are often sufficient to capture the context-specific meanings of each dimension (Carman 1990, Buttle 1996). However, other dimensions such as price have not been considered at all within the five PZB dimensions (Lewis 1993).

Cronin and Taylor (1992) argued researchers should use the original ten dimensions instead of PZB's reduced set of five, whilst Babakus and Boller (1992) suggested SQ may be complex in some industries and unidimensional in others. Thus, the five SERVQUAL dimensions are not universals and likely need to be contextualised with respect to measurement items and the industry being studied (Buttle 1996).

Longitudinal Replication: Temporal administration of SERVQUAL has been criticised as regard replication over time and administrations of the expectations and perceptions batteries (Lewis 1993, Buttle 1996, Lam and Woo 1997). PZB designed SERVQUAL to be used over time due to its generic nature. Berry and Parasuraman argued that a single SQ study is “a snapshot taken at a point in time” but that “deeper insight and more informed decision making come from a continuing series of snapshots” (1997 p.65).

However, Lam and Woo (1997) tested and retested SERVQUAL over four different time periods in a year and found the perceptions or performance battery unstable over time. This led them to conclude that use of SERVQUAL performance measures only as suggested above may not be useful in measuring SQ over time.

Carman (1990) argued it is impractical for respondents to complete the expectations battery before a service encounter and the perceptions battery immediately afterwards. He also criticised PZB for asking respondents to complete the instrument at one sitting as respondents might overstate their expectations and thus introduce bias in the results (Carman 1990, Lewis 1993, Buttle 1996).

Alternative methods of data collection have been suggested (ibid.), such as combining both batteries in a single measure or graphic scaling, however they do not resolve the bias issue. Moreover, separate temporal administration of each battery might affect the quality of responses concerning the Moment of Truth (MOT) or critical incident of a service encounter (Lewis 1993, Buttle 1996).

In summary, SERVQUAL appears methodologically sound, uses appropriate measurement scales, and its use of expectations is consistent with previous arguments concerning satisfaction. However, its psychometric measures, dimensions and longitudinal replication are open to interpretation. Nevertheless, its expectancy-disconfirmation basis provides a tool for examining SQ in logistics.

4.3.4 Service Quality and Logistics

SERVQUAL and its corresponding issues of SQ were designed from a business to consumer (B2C) perspective. However, logistics services in this study form a business to business (B2B) perspective. This section discusses whether SQ and SERVQUAL can be applied in a B2B and logistics context.

Parasuraman noted that customer service and SQ research in B2B is “rather meager” (1998 p.320) and provided an agenda for research based on the PZB model of SQ and SERVQUAL contained in Figure 3.1. Parasuraman and Grewal (2000) expanded this agenda to include a technology component that affects the SERVQUAL dimensions and perceived value as constructs of customer loyalty. Neither study provided empirical tests, but called for further development and empirical testing of these conceptual models.

Mehta and Durvasula (1998) empirically tested SERVQUAL in a B2B context surveying commercial shipping managers in Singapore. Scale reliabilities ranged from 0.58 to 0.90 however no validity measures were reported. Notwithstanding a possible lack of rigour, Mehta and Durvasula advised “importance and expectations measures are unnecessary” and unweighted perceptions measures “alone are adequate in indicating SQ levels in B2B services” (1998 p.49).

Woodall criticised SERVQUAL for emphasising functional SQ and called for SQ research to develop a new model of SQ that re-includes a technical component and reality perspective. He also noted that “SQ is interpreted as ‘customer service’ and has come to imply more [i.e. quantity] rather than better [i.e. quality]” (2001 p.597). Woodall cited the Six Sigma process of TQM as a possible taxonomy for businesses to adopt.

These four articles did not provide deep insights into the use of SQ models or SERVQUAL in a B2B context, but do provide a point of departure for research. There has been some application and empirical study in the logistics literature, reflecting logistics activities’ consideration as almost pure services.

Mentzer, Gomes and Krapfel (1989) and Rinehart, Cooper and Wagenheim (1989) were the first to conceptually discuss customer perceptions and expectations of physical distribution activities and other components of customer service. Mentzer, Gomes and Krapfel developed a conceptual model, shown in Figure 4.6 that proposed satisfaction as the outcome of the customer's perceptions-expectations differences. Rinehart, Cooper and Wagenheim expanded Mentzer, Gomes and Krapfel's model to include variables of customer service that might be considered important in a logistics context.

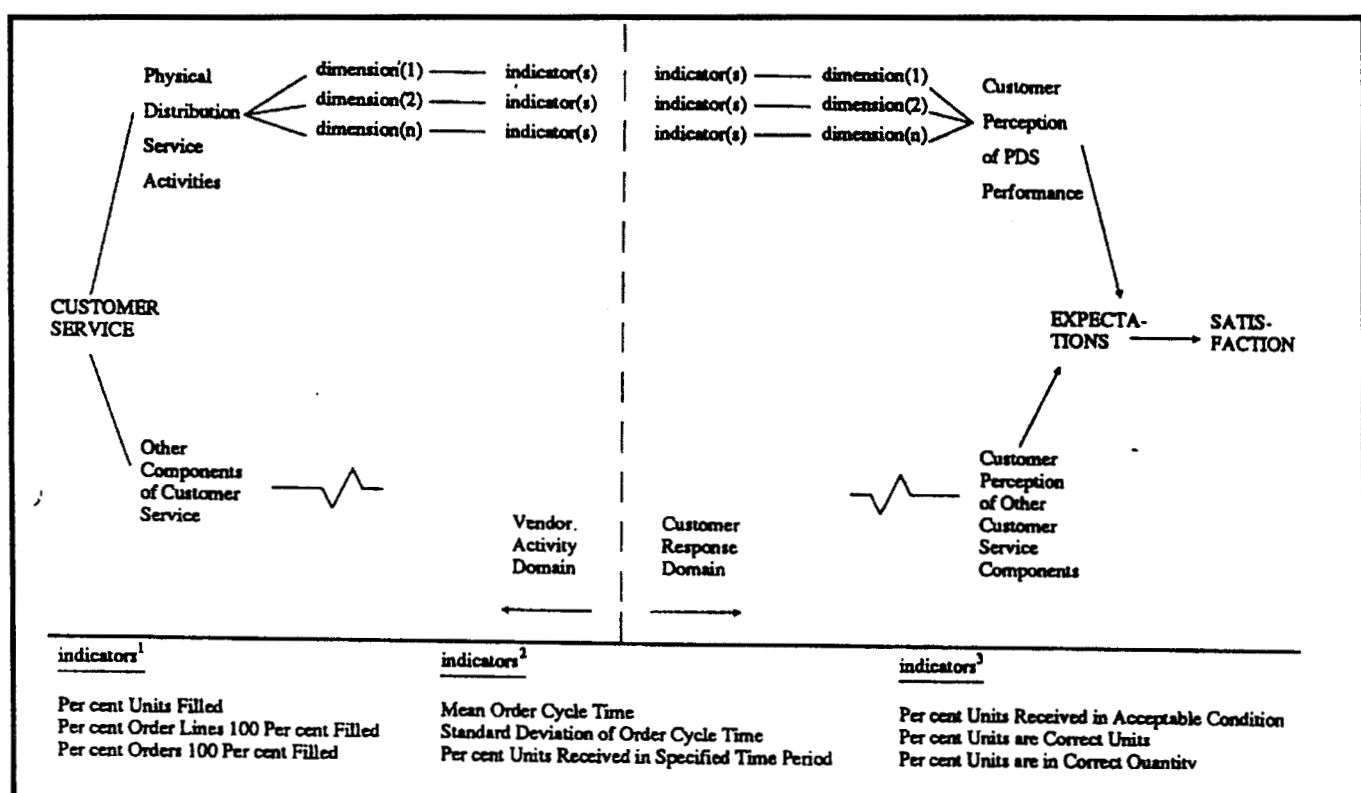


Figure 4.6: Conceptual Customer Service/Satisfaction Model
(Source: Mentzer, Gomes and Krapfel 1989 p.59)

Neither Mentzer, Gomes and Krapfel nor Rinehart, Cooper and Wagenheim referred to any work by PZB on SQ or Oliver on satisfaction. They both based their concepts on work by Perrault and Russ (1976), La Londe and Zinzser (1976) and earlier versions of Gilmour, Borg, Duffy, Johnston, Limbek and Shaw (1994).

Hopkins, Strasser, Hopkins and Foster (1993) applied the SERVQUAL instrument to a transportation setting with shippers and carriers both participating. They compared difference scores between shippers and carriers to determine “significant differences between what shippers want and what they believe they are receiving” (1993 p.156).

However, Hopkins, Strasser, Hopkins and Foster did not consider any of the criticisms discussed above and also did not examine whether the items loaded onto any of the five dimensions. Thus, their study suffered from a lack of academic rigour.

Bienstock, Mentzer and Bird (1997), citing difficulties in replicating the five SERVQUAL dimensions, SERVQUAL's poor predictive validity and an emphasis on technical or outcome variables in a B2B context, developed an alternative conceptualisation of dimensions for physical distribution SQ (PDSQ). They also followed Churchill's (1979) recommendations for scale development and their final item pool consisted of 15 items across dimensions of timeliness (6 items), availability (5 items) and condition (4 items). Bienstock, Mentzer and Bird considered their scale reliable, with coefficient alpha over 0.80 for all three dimensions, and valid based on an expectations-performance empirical test using SEM and a sample of mainly manufacturing firms and government agencies.

Mentzer, Flint and Kent (1999) followed up this study to develop a logistics SQ (LSQ) scale among customers of the Defense Logistics Agency (DLA). Again using SEM, they developed nine dimensions by forcing three items per dimension. Two dimensions were tapped with only two items and 6 dimensions related to different aspects of the order process. They did not report whether their survey used an expectations-performance empirical test however Mentzer, Flint and Kent also considered this scale to be reliable and valid.

Finally, Mentzer, Flint and Hult (2001) tested the Mentzer, Flint and Kent (1999) scale, again with a sample drawn from the DLA, to examine LSQ as a process leading to an output of satisfaction. Again, they did not report whether their survey used an expectations-performance empirical test but indications are they tested only perceptions. These four studies will be further discussed in Chapter Seven in the development of this study.

The shortcomings in these six articles suggest a requirement for further SQ research in logistics. However, as Bienstock, Mentzer and Bird (1997) noted, SERVQUAL

contains several conceptual and methodological difficulties that are not appropriate in a logistics B2B context. Measures of customer service and customer satisfaction in logistics appear to have other underlying dimensions different from the five SERVQUAL dimensions.

4.4 CONCLUSION

Customer satisfaction or dissatisfaction is the output of a firm's customer service strategy and has been defined as the customer's fulfilment response with respect to a product or service based on expectations and perceptions. The customer can also be under- or over-fulfilled in addition to being simply fulfilled. Whilst a good deal of theoretical and empirical work has been undertaken on satisfaction in a consumer context, confusion remains over concepts and definitions in customer satisfaction as it does in customer service. This may be due to diverse samples, products and industry settings in which the research has been conducted. Further, little work has been done in business-to-business settings, particularly in a logistics service context.

The overarching framework for customer satisfaction is the expectancy-disconfirmation paradigm where customers develop expectations prior to a product or service experience, and then either confirm or disconfirm those expectations afterwards. This comparison is in terms of product or service performance, which has business implications for a supplier providing the product or service. Some implications that have been identified and will be explored further in Chapter Five include profitability, customer retention and ongoing customer relationships.

Some authors have argued that customer satisfaction and service quality are distinct constructs with different antecedents and that predictive expectations are not the only antecedent of customer satisfaction. Expectations can be derived from attitudes towards products and event experiences. Work by psychologists in attitudes and critical incidents may be used to develop methodologies in satisfaction research. Several academic and prescriptive models in the satisfaction and logistics literature

provide a useful point of departure for this study's methodology and will be discussed further in Chapter Five.

Quality has also appeared as a feature in both the customer service and satisfaction debates and the following section considers service quality in terms of the customer service and satisfaction debate. Notwithstanding issues surrounding the SERVQUAL instrument, the premise of Oliver and PZB that customer satisfaction is an outcome of SQ, where perceptions are compared to a priori expectations, provides a point of departure for understanding customer service and satisfaction in logistics. Whilst some empirical studies to date in the logistics discipline have deviated from original PZB concepts, they attempt to understand what logistics customers may want and what their behavioural intentions may be towards certain customer service and LSQ initiatives.

Further, other authors have argued that customer satisfaction and SQ may be distinct constructs with different antecedents, predictive expectations may not be not the only antecedent of customer satisfaction, and satisfaction may itself mediate behavioural intentions (Oliver 1993, Spreng and Mackoy 1996, Dabholkar, Shepherd and Thorpe 2000).

Stank, Daugherty and Ellinger cited a former president of American Express as stating "in a commodity-like business, [such as food processing], service is the only way to create product differentiation" and therefore satisfy customers (1998 p.78), which they included to mean logistics or distribution service. Stank, Daugherty and Ellinger contended that "as clichéd as it sounds, business really does begin and end with the customers" (1998 p.79) and suggested existing research in food chains has not provided sufficient understanding of customer service and ultimately customer satisfaction. They noted that "identifying core operational service elements is a minimum requirement for competing, but it will certainly not be enough to distinguish a service provider from the pack, or guarantee that customers will be loyal" (ibid.). Thus, the requirement for understanding customer satisfaction in this

industry is as paramount as customer service and product quality, the latter of which is usually presented as a primary consideration for the food chain.

These issues of customer satisfaction and SQ are considered in this study. The impact of customer service, customer satisfaction and SQ on a firm's customers and profits may be significant and the next chapter examines this impact in the context of this study.

CHAPTER FIVE

IMPORTANCE OF LOGISTICS TO THE FIRM

5.1 INTRODUCTION

Chapters Three and Four discussed concepts of customer service, customer satisfaction and service quality. This chapter discusses their impact on a firm's financial performance. First, the concept of a firm's financial performance will be discussed from a macro and strategic logistics perspective. Then, the impact of customer service, customer satisfaction and service quality on profitability in logistics will be presented. This discussion leads to consideration of customer service cost-profit trade-offs that affect all firms. Finally, conclusions are presented as a precursor to discussions of logistics relationships in Chapter Six.

5.2 MACRO OBJECTIVES AND STRATEGY IN LOGISTICS

This section considers the importance of logistics to the firm, but will first discuss the importance of logistics to firms and the economy on a macro level. As logistics activities, logistics management and SCM have gained acceptance, logistics has grown from a concept of functional cost centres, such as warehousing and transportation, to integrative value creating centres (Heaver 2001). Stock and Lambert (2001) reported the total value of logistics activities in the U.S. economy at \$921 billion U.S. or 9.9% of GDP in 1999. Significantly, logistics' share of GDP has fallen from 16.5% in 1981 (ibid.), reflecting efficiency gains in logistics activities and systems. Stock and Lambert considered these gains important contributions to the economy and society. For example, if the approximately \$300 billion difference

had been spent on logistics there would have been “higher prices for consumers, lower profits for businesses, or both... a lower overall standard of living and/or a smaller tax base” (2001 p.6).

Logistics Europe (Anon. 2001) reported the total value of the logistics industry in Europe at €150 billion in 1999, an increase of €5 billion from 1998. This estimated represents only about 1.8% of the European Union’s nearly €8 trillion GDP in 1999 (Energy Information Administration 2002). No other aggregate or detailed statistics have been found to reconcile the difference between the U.S. and European percentage of GDP figures.

A separate market has also grown for logistics services provided by independent firms known as third-party logistics service providers or 3PLs. Logistics in the economy now “has two dimensions: logistics management in the manufacturing and distribution organisations, and logistics organisations providing services to the manufacturing and distribution companies” (Heaver 2001 p.13).

Kotler noted “private firms should not aim for profits as such but to achieve profits as a consequence of creating superior customer value” (2000 p.23). Hence, whilst firms require customers to buy products to generate revenue, they will only do so if their needs are satisfied. Chapter Two demonstrated that “marketing achieves firm objectives by meeting and exceeding customer needs better than the competition” (Jobber 2001 p.23) through the marketing concept and value creation.

However, the notion of only being profit-driven is simplistic in modern business environments. Firms have many stakeholders including shareholders, customers, suppliers, employees and government and need to meet and balance the needs of these various stakeholder groups. A high-performance business does so by “setting strategies to satisfy key stakeholders by improving critical business processes and aligning resources and organization” (Kotler 2000 p.40).

Porter prescribed the following principles, which encapsulate the above propositions,

for firms to establish a unique strategic position:

Start with the right goal: superior long-term return on investment,
A firm's strategy must enable it to deliver a value proposition, or set
of benefits, different from those that competitors offer,
Strategy needs to be reflected in a distinctive value chain,
Robust strategies involve trade-offs,
Strategy defines how all the elements of what a firm does fit together,
and
Strategy involves continuity of direction (2001 p.71).

Porter (1985), "one of the finest corporate strategists of the modern era made a significant contribution, albeit sometimes opaquely, to the development of supply chain thinking" (Hall and Braithwaite 2001 p.90) with his Value or 'Push' Chain framework shown in Figure 5.1. Porter's value chain analysis disaggregates the firm into nine value-creating and strategic activities in either a primary or support category (Porter 1985, Christopher 1998, Johnson and Scholes 1999, Hall and Braithwaite 2001, Schary and Skjøtt-Larsen 2001).

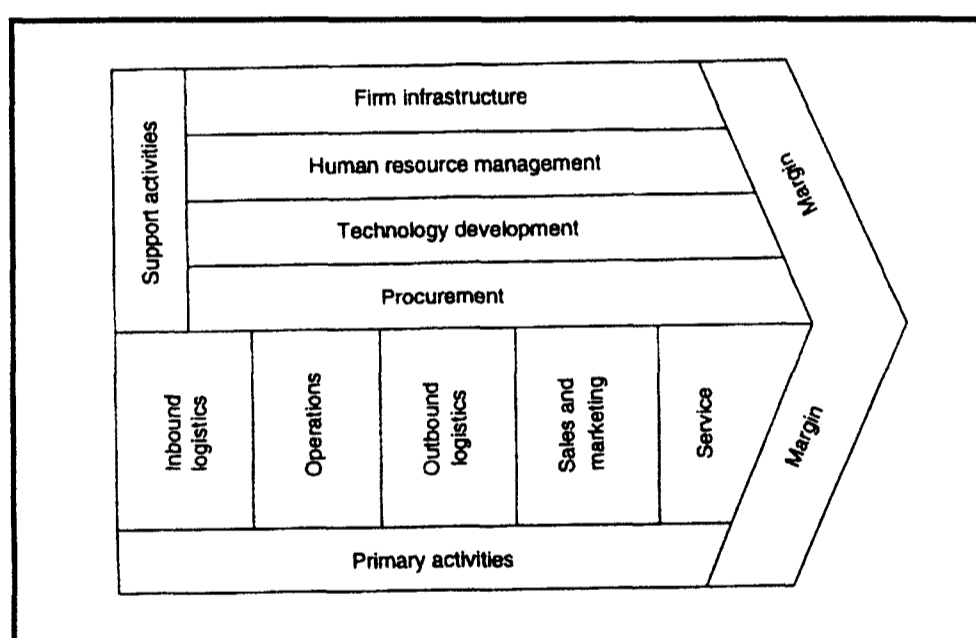


Figure 5.1: Porter's Value or 'Push' Chain

(Source: Porter 1985 p.37, Johnson and Scholes 1999 p.158, Hall and Braithwaite 2001 p.91)

Logistics and SCM represent a comprehensive process, incorporate other components of primary activities and provide linkages to other strategic systems within the firm (Langley and Holcomb 1992). Thus, logistics provides a competitive advantage for firms through the successful implementation of these activities and creates value for customers (Porter 1985, Langley and Holcomb 1992, Christopher

1998, Johnson and Scholes 1999). Firms must however also possess “a strategic logistics orientation... to create customer value and sustainable competitive advantage” (Langley and Holcomb 1992 p.8).

In Porter’s value or ‘push’ chain orientation, the supply chain anticipates customer demand and places appropriate inventory at point of sale (Schary and Skjøtt-Larsen 2001). This orientation constructs value through the imposition of profit margins at successive points in the chain. Costs are transmitted up the chain with input costs for chain members determined by the selling price of the preceding level (Hall and Braithwaite 2001). Despite these apparent advantages, there are several criticisms of the value or ‘push’ chain framework.

First, there is no guarantee that the next level in the chain is able to afford the goods or services, still less that the end customer or consumer will find the price attractive. Thus, there may be disparity between a realistic market price and the supply chain’s cost behavior (Hall and Braithwaite 2001). Second, a ‘cost plus’ environment provides little incentive for suppliers to improve their performance and reduce costs. Customers in the chain may therefore be inclined to seek alternative suppliers, adding to their total cost of acquisition (Hall and Braithwaite 2001).

Third, the value or ‘push’ chain produces to a demand forecast to meet projected sales targets. It thus requires inventory at point of sale because of lead times required for producing and distributing products to market. This is also more costly because of inventory and the danger of missed sales by not having the right product available at the right place at the right time (Schary and Skjøtt-Larsen 2001). These two latter situations might negatively impact long-term profitability of members in the chain and reduce member and chain stability. Fourth, the framework does not specifically identify what value is created for the customer by logistics activities themselves, nor clarify the relationship of customer service in these activities (Rutner and Langley 2000). Finally, the value or ‘push’ chain does not respond rapidly to market changes or needs due to its inherent rigidity in planning and production, the customer

becomes a passive respondent rather than proactively initiating action (Schary and Skjøtt-Larsen 2001).

In contrast, the Demand or ‘Pull’ Chain shown in Figure 5.2 operates on the principle that the supply chain must be able to deliver to market a product at an affordable and demanded price. The ‘pull’ chain treat orders individually and the entire supply chain operates on the basis of orders received. Products are made to order, often by direct coordination with suppliers, and it is possible to configure orders to individual customers (Schary and Skjøtt-Larsen 2001). A ‘pull’ chain should be more responsive with production matched to individual customer orders. It should also be able to anticipate the general direction of demand and respond by organizing the supply network and capacity, possibly producing components and materials to match a general forecast (Schary and Skjøtt-Larsen 2001).

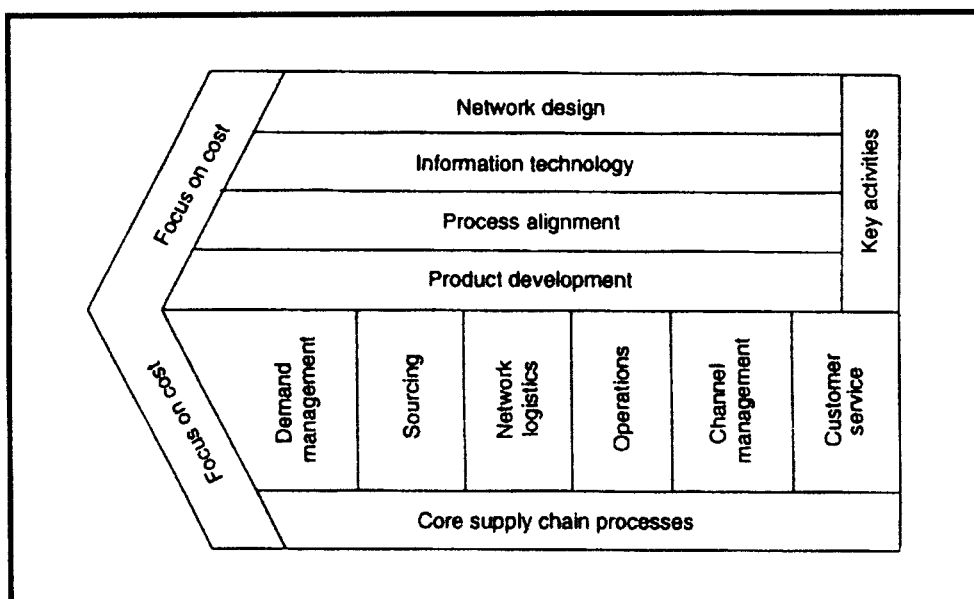


Figure 5.2: Demand or ‘Pull’ Chain

(Source: Hall and Braithwaite 2001 p.92)

Chain members or suppliers thus become responsible to ensure operating costs and commercial structures support this objective as profitability is derived from their own input costs; price will be determined by the customer. Thus, a ‘pull’ chain places downward pressure on suppliers to become more efficient and operate for the common good (Hall and Braithwaite 2001).

Suppliers may receive support and guidance to achieve greater levels of efficiency from initiatives developed by customers, sometimes extending to operations

consultants providing advice on more efficient and effective manufacturing techniques (Hall and Braithwaite 2001). Such support and cooperation should lead to relationship or partnership development between chain members, i.e. suppliers and customers. In practice this has proven difficult as discussed in the next chapter.

Therefore, the demand or 'pull' chain approach better meets marketing concept and marketing orientation strategy requirements for firms. However, it has criticisms in terms of relationship power and increasing pressure on chain members to continually reduce costs, which will be discussed further in the next section and Chapter Six. Notwithstanding these criticisms, the demand or 'pull' chain approach to consider and meet customer needs is the theoretical orientation for this study.

Christopher considered differentiation from competitors is best accomplished through two vectors of strategic direction (1998 p.5): (1) utilising assets better, i.e. a productivity or cost advantage, (2) to meet customer needs at an acceptable price, i.e. a value advantage. A matrix based on these two vectors, shown in Figure 5.3, provides four strategic positions (Christopher 1998). A commodity market position indicates a firm's products are indistinguishable from competitors and they have no cost advantage. A cost leader position entails economies of scale where a firm focuses on sales volume and market share. A service leader position firm provides value-added services for customers to increase responsiveness and reliability.

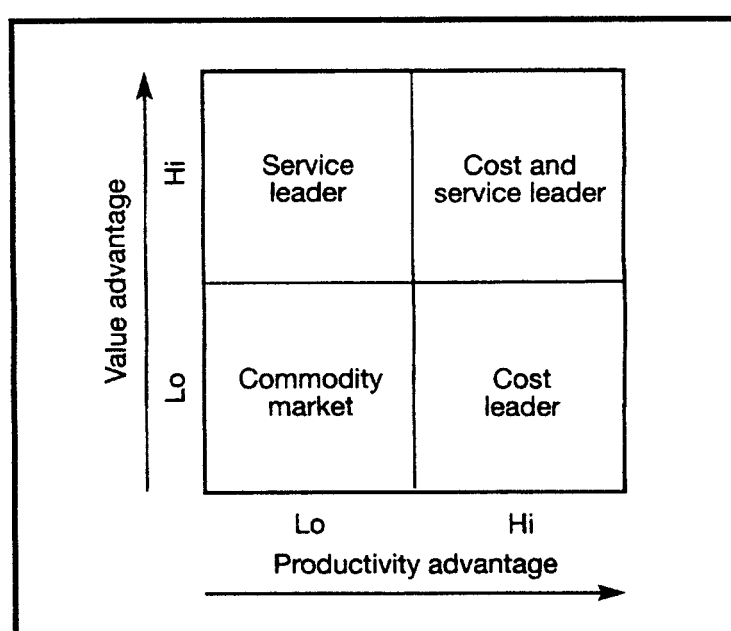


Figure 5.3: Logistics and Competitive Advantage

(Source: Christopher 1998 p.8)

A difficulty for firms in commodity markets is to develop profitability with a limited degree of market orientation, i.e. customer focus. Narver and Slater (1999) studied the relationship between market orientation and business performance in major U.S. firms. Their concept of market orientation was based on three measures: customer orientation, competitor orientation and interfunctional coordination.

The results of Narver and Slater's study (1999) are shown in Figure 5.4. Firms in non-commodity businesses exhibit a linear or monotonic positive market orientation-business performance relationship. However, firms in commodity businesses exhibit a positive market orientation-business performance relationship only when their market orientation level is above the median for their industry. Thus, whilst a market orientation is recommended for all types of firms, it appears particularly important for firms in a commodity business, such as food processing. Food processing is the industrial sector investigated in this study and is discussed further in Chapter Eight.

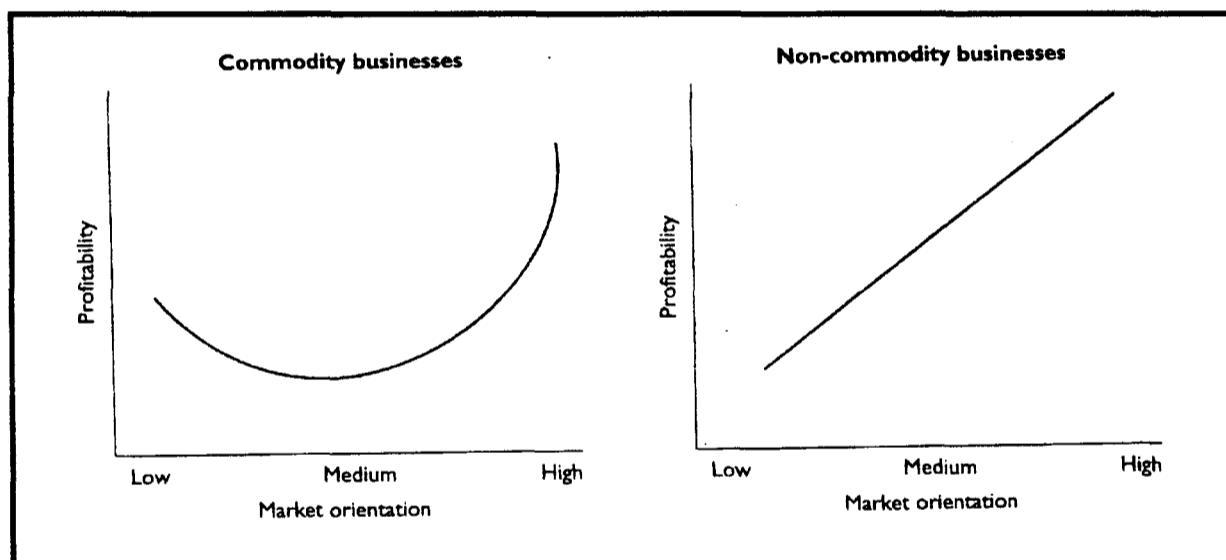


Figure 5.4: Relationship between Market Orientation and Profitability

(Source: Jobber 2001 p.20)

Christopher developed three frameworks to examine how market orientation applies to an SC. First, SC effectiveness is combined with consumer and customer franchise to provide a marketing advantage from customer service as presented in Figure 5.5. SC effectiveness refers “to the issue of performance, and whether the logistics function meets customer requirements in certain critical results areas” (Langley and Holcomb 1992 p.7). In this framework, consumers perceive receipt of a superior product or service and are thus attracted to the firm's offerings, whilst customers or

intermediaries want to do business with the firm for tangible economic benefit (Christopher 1997).

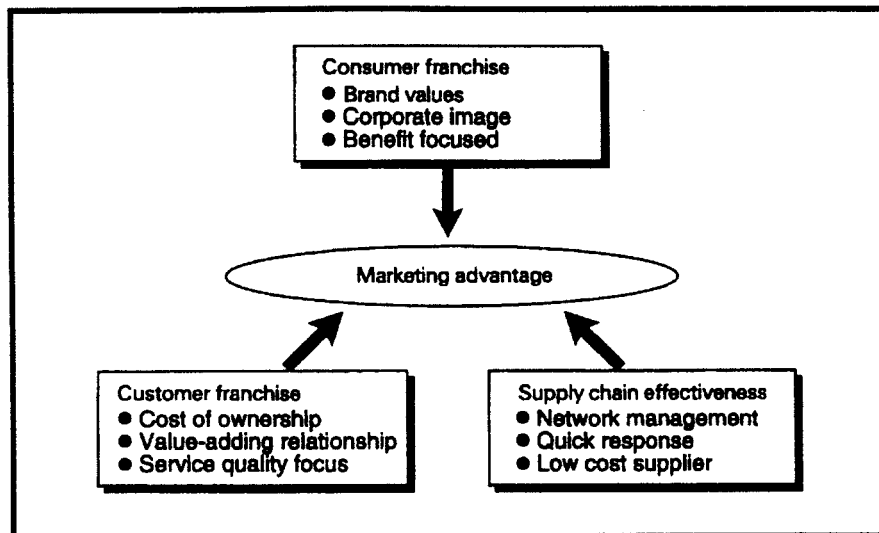


Figure 5.5: Supply Chain Effectiveness and Marketing Advantage
(Source: Christopher 1997 p.18)

In the second framework, SC efficiency is more cost and resource driven than SC effectiveness. SC efficiency is termed the firm’s “ability to provide the desired product/service mix at a level of cost that is acceptable to the customer” (Langley and Holcomb 1992 p.7) and is coupled with consumer and customer franchise to deliver marketing effectiveness, shown in Figure 5.6. Consumer and customer franchises are the same whilst marketing effectiveness consists of profitability measures such as market share and return on investment (Christopher 1998).

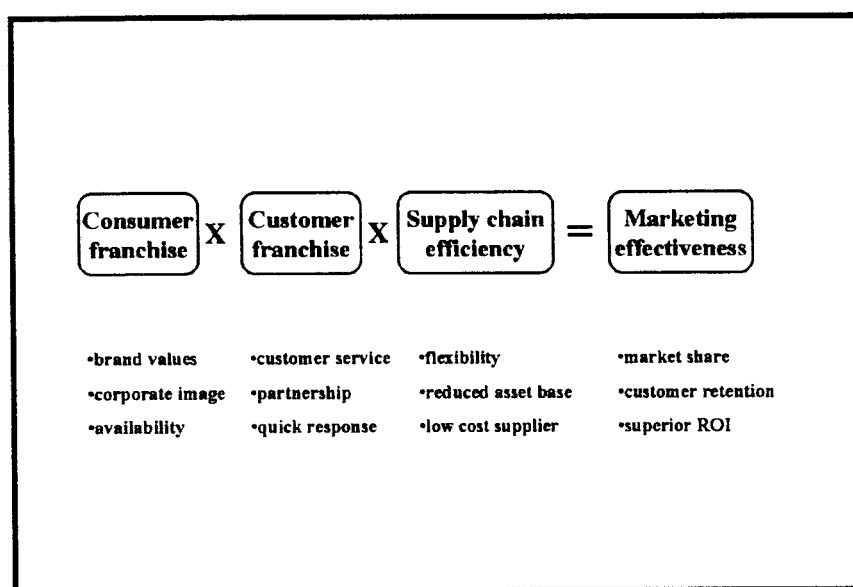


Figure 5.6: Supply Chain Efficiency and Marketing Effectiveness
(Source: Christopher 1998 p.43)

The third framework combines SC effectiveness, consumer franchise and customer relationships to produce enhanced shareholder value (ESV), as shown in Figure 5.7.

Consumer franchise is the same, but customer relationships up and down stream in the SC become a driver of ESV (Christopher and Ryals 1999).

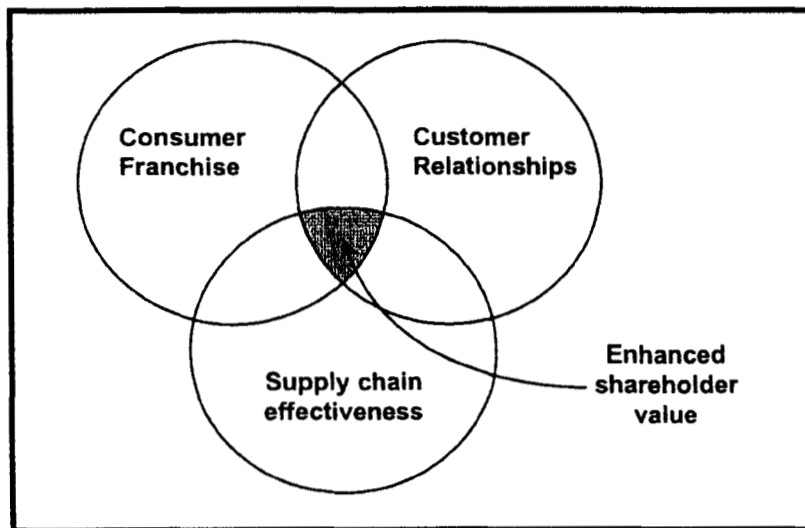


Figure 5.7: Supply Chain Effectiveness and ESV

(Source: Christopher and Ryals 1999 p.8)

Christopher's three frameworks were developed for different prescriptive purposes, however they share a common theme. A firm's efficient and effective implementation of logistics or SC activities to meet customer needs and establish a 'franchise' with them using a market orientation should lead to enhanced firm performance and shareholder value and a unique competitive advantage for the firm.

The integrative framework shown in Figure 5.8 represents this theme and provides a micro model for individual firms as regards their logistics or SC strategy. Customer satisfaction represents the outcome of customer service meeting customer needs. Customer satisfaction is also strongly related to customer value as both concepts describe the customer's evaluative judgements about products and services received (Woodruff 1997).

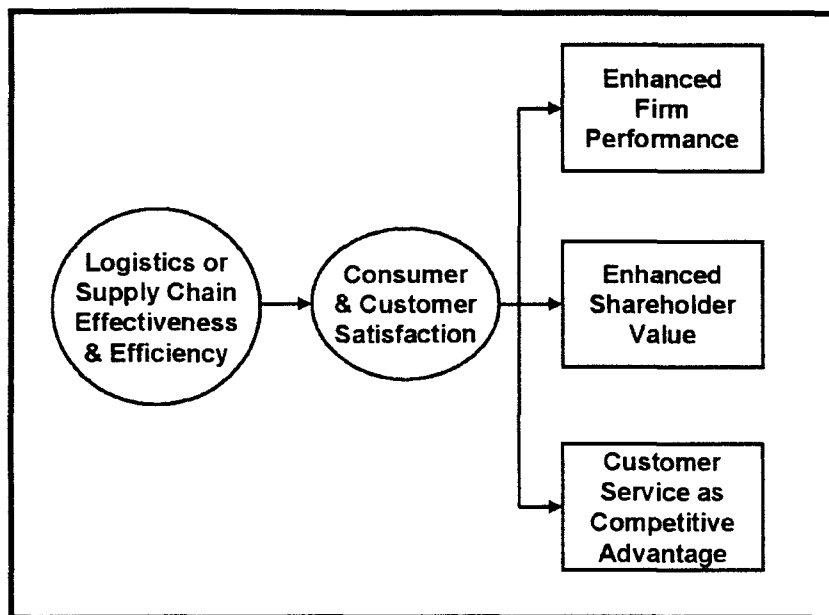


Figure 5.8: Integrative Strategic Logistics Framework

5.3 CUSTOMER SERVICE AND SATISFACTION, SERVICE QUALITY AND PROFITABILITY

Authors have examined the relationship between customer service, customer satisfaction, service quality and profitability since the early 1980s. Empirical studies examining these relationships and customer service in logistics are discussed in Chapter Seven. This section discusses conceptual frameworks behind these relationships.

Academic literature has proposed customers satisfied with a firm's products or services, due to exceptional customer service efforts, develop increased customer loyalty, which leads to repeat and increased purchases. Such behaviour in turn should improve corporate financial performance (Anderson, Fornell and Lehmann 1994, Eckert and Goldsby 1997, Tucker 1983). Practitioners have also recognised this behaviour progression (Emerson and Grimm 1998).

Oliver's (1997) cycle of satisfaction, shown in Figure 5.9, represents an iterative process that predicts consumer repurchase intention or loyalty based on satisfaction and attitude influences. The cycle links Oliver's model (Figure 4.2) with Fishbein and Ajzen's attitude and intentions framework (Figure 4.1).

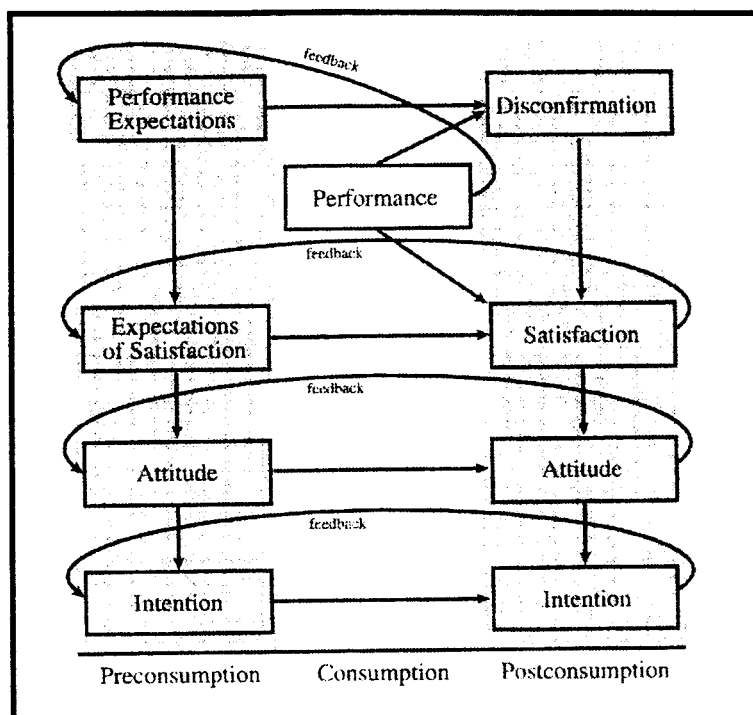


Figure 5.9: The Cycle of Satisfaction

(Source: Oliver 1997 p.388)

Anderson and Sullivan (1993) and Anderson, Fornell and Lehmann (1994), in their macro-level studies empirically examined satisfaction and firms' economic performance. They found that firms who achieved high customer satisfaction also enjoyed superior financial performance measured by both return on investment (ROI), i.e. profit divided by investment in the firm's assets, and market share. Müller (1991) reported a survey of consumer durable manufacturers that found a positive correlation between satisfaction and repurchase loyalty.

Anderson, Fornell and Lehmann (1994) also posited that profitability would only be developed from the long-term strategic use of customer satisfaction and quality together. Quality in this context includes both product and service quality. Elsewhere, Novich reported companies with superior service increase both market share and profits, they "grow 8% faster, realize a 7% price premium and are 12 times as profitable as companies with inferior service levels" (1992 p.45).

Blanding (1992), Dresner and Xu (1995) and Innis and La Londe (1994) discussed market share developed from repeat purchases and customer loyalty as a surrogate for profitability and customer satisfaction. Firms have been encouraged to provide value-added services, be customer-responsiveness to differentiate themselves in the market, and enhance the customer's purchase experience, thus obtaining such

customer loyalty, profitability and market share (Daugherty, Sabath and Rogers 1992). However, none of these studies provided a complete link from service to profitability.

Daugherty, Stank and Ellinger (1998) provided such a link with their sequential framework, shown in Figure 5.10. They hypothesised that loyalty leads to increased market share in a logistics context, but only found limited support in an empirical test of retailer perceptions of personal product vendor capabilities. They did however confirm a strong link between vendor logistics capabilities, i.e. service offerings and customer satisfaction.

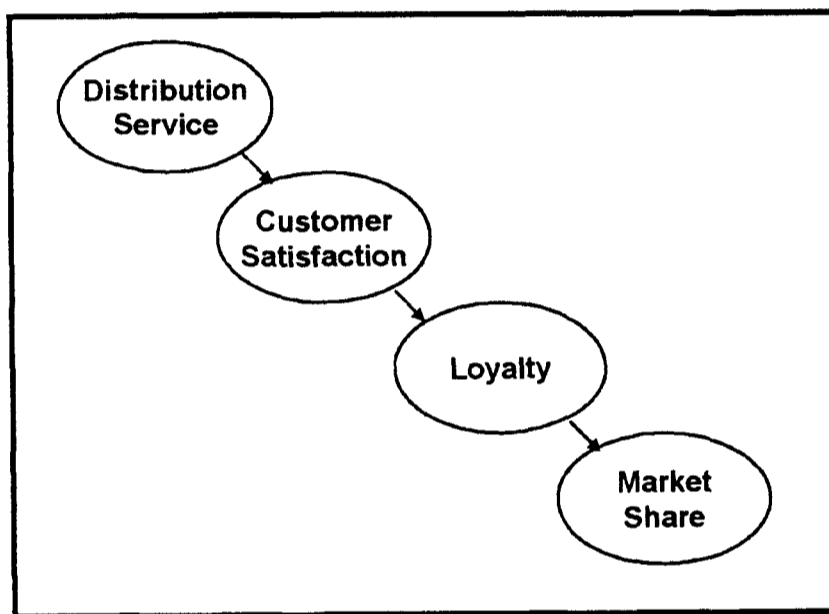


Figure 5.10: Conceptual Model of Satisfaction and Market Share
(Source: Daugherty, Stank and Ellinger 1998 p.37)

Customer loyalty and its impact on profitability have also been examined longitudinally, as shown in Figure 5.11. Schary noted firms require “knowledge of not only customer response to service offerings but how the supplier’s logistic processes interact with the customer’s precise needs for product use. This is a longer term perspective than what is often meant by customer service” (1992 p.342).

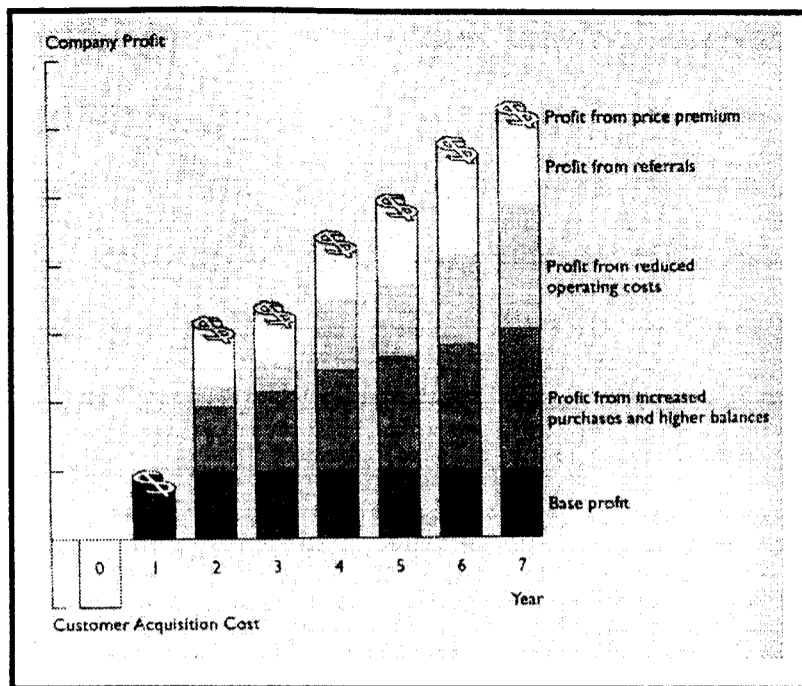


Figure 5.11: Customer Profitability over Time

(Source: Reichheld and Sasser 1990 p.108, Hoffman and Bateson 1997 p.360)

Customer profitability should increase over time due primarily to increased purchases and reduced costs due to economies of service (Reichheld and Sasser 1990, Hoffman and Bateson 1997). Further, a reduction in customer defections by 5% should increase profits anywhere from 25% to 85% over their tenure with a firm (Reichheld and Sasser 1990). Thus, the ability of firms to retain customers over the long-term may have a significant impact on profitability (Manrodt and Davis 1993).

Customer retention is also important due to increased competition, particularly in commodity businesses, and the cost of obtaining a new customer through 'conquest marketing' to replace a customer defection (Hoffman and Bateson 1997). Novich (1992) suggested customer turnover would be reduced, and thus customer retention increased, by firms offering superior service.

Daugherty, Ellinger and Plair (1997) examined the importance of key customers, or key accounts, of firms. They found key accounts demonstrate higher levels of loyalty and customer satisfaction related to specialised service offerings. However, offering specialised services, focussing on key accounts and retaining customers all incur costs. East (1999) argued there is mixed evidence that doing so will increase revenue and profits through tenuous conceptual linkages that lack deep empirical analysis. East questioned definitional issues regarding recruited, retained and recovered

customers and the association between increased customer retention and market share growth.

Firms should only increase service costs to increase profits if an adequate ROI on their endeavours is achieved (Eckert and Goldsby 1997). This recommendation suggests firms will make trade-offs between customer service costs and profits. The next section considers such trade-offs.

5.4 CUSTOMER SERVICE COST AND PROFIT TRADE-OFFS

Profitability is determined by revenue, as a function of pricing and volume sold, and costs, expressed as both fixed and variable per unit sold. The provision of value-added services benefits customers and should yield increased profits for a firm. However, adding additional services in order to differentiate themselves from competitors will cost firms part of any increased profits. Should they do so? If so, how many and which additional services should they offer?

Morash, Dröge and Vickery argued these issues should be considered independently as two major value disciplines: a “demand-oriented or customer-oriented approach” and a “supply-oriented approach” (1996 p.2). The demand-oriented approach has dimensions of pre- and post-sale customer service, delivery speed and reliability, and responsiveness to target markets. The supply-oriented approach has dimensions of availability, distribution coverage i.e. selective or exclusive outlets, and low total cost. Morash, Dröge and Vickery surveyed CEO’s of large U.S. furniture firms on the perceived importance of these dimensions, their firms’ implementation of such dimensions and financial performance. They found mixed correlation between demand and supply dimensions and concluded there was a “lack of support for a primary trade-off focus” (1996 p.18). Notwithstanding, they established the concept of separate revenue, i.e. customer, and cost, i.e. product/service offering capabilities as two dichotomous constructs for study.

Shapiro noted “no single logistics system can do everything well” and that “trade-

offs are inevitable” (1992 pp.50-51). Thus, firms face a dilemma in determining and setting appropriate levels of customer service at a profit, notwithstanding differentiation and competitive advantage benefits that may be achieved (Eckert and Goldsby 1997). Firms also need to understand how customers consider logistics service trade-offs among different alternatives in order to provide them customer value (Holcomb 1994), which has been delineated above as a combination of customer service, satisfaction and quality. The concept of providing many services to all customers regardless of cost is being revisited by firms; some shippers are even asking customers to share costs, where appropriate, to optimise the supply chain (Richardson 1998).

However, few firms use a measure of service relevant to their customers in such calculations, more often than not they use measures relevant to themselves as suppliers (Novich 1992). Firms also tend to set customer service levels too high, in addition to not recognising customers have different needs than themselves (Bookbinder and Lynch 1997). Further, there has been little effort to link profits and levels of service provided. Blanding argued “sales people continue to sell with little regard for product availability, profitability, or logistical feasibility, while production people make what’s cheapest to make, and financial people find themselves spending \$75 for every \$50 they save in returns and adjustments” (1991 p.45).

Thus, firms need practical models to separate customers willing to pay for improved services and those who are not, which is the revenue side of the profitability equation (Eckert and Goldsby 1997). Several diverse models have been proposed for logistics applications derived from marketing and other disciplines. Blanding (1991) discussed the use of ‘hypertargeting’ accounts by revenue and channel to improve their revenue and profit potential. Basic market segmentation of customers has been suggested by Eckert and Goldsby (1997) using an elaboration likelihood model from consumer behaviour, and by Holcomb using the Taguchi method for “working with large numbers of variables, interactions, and levels of variables in different environments” (1994 p.30). Bookbinder and Lynch (1997) modelled a logarithmic utility function to maximise customers’ utilities of service attributes and optimise

budgets. Whilst these four models have potential, they are limited in scope as regards the Daugherty, Stank and Ellinger (1998) framework posited in Figure 5.10. Also, they have either not been empirically tested or have only had cursory testing and therefore require more confirmatory testing to establish reliability and validity.

On the other side of the profitability equation, logistics can account for as much as 25 to 35% of production costs, and there is profit leverage to be derived by reducing logistics costs (O'Neil and Iveson 1991, Lambert and Stock 1993, Stock and Lambert 2001). Hill (1994) and Holcomb (1994) argued firms need to consider and focus on cost minimisation techniques. However, Cooper and Kaplan (1991), Lambert and Stock (1993) and Stock and Lambert (2001) countered that current accounting systems do not allow firms to derive attributed costs needed to calculate profit. Cooper and Kaplan suggested activity-based costing (ABC) as a solution to this dilemma.

Manrodt and Davis (1993) alternatively proposed the use of the total cost concept to minimise total logistics costs. This proposal is based on a total systems approach. Pisharodi and Langley (1991), Schary (1992) and Holcomb (1994) all proposed systems with 'cybernetic' or feedback loops from customers for long-term strategic planning purposes. This systemic approach suggests an integrated strategy across a firm's various business units.

O'Neil and Iveson called for an integrated logistics approach "in order to provide desirable levels of customer service at least total cost to the firm" (1991 p.359). The cost-trade-off model shown in Figure 3.7 (Lambert and Stock 1993, Stock and Lambert 2001) considers customer service costs within the firm's marketing mix variable of place.

The problem with these various cost approaches is they focus entirely on the cost side of the profitability equation. Dimensions of customer service are derived from the supplier's perspective rather than the customer's perspective. Thus "for many firms the logistics function has developed from a supportive cost cutting activity"

(O’Neil and Iveson 1991 p.373). Since “the customer’s assessment of value depends upon the customer’s frame of reference” (Lapierre 2000 p.133) firms must adopt this perspective to provide customer value in accordance with the demand chain discussed above.

Firms may also have to develop new or different internal processes to undertake this perspective. Woodruff (1997) presented a customer value determination (CVD) process, shown in Figure 5.12, that provides a checklist of five questions for firms to consider regarding their target customers, which could be key accounts. Question numbers 2 and 3 in Woodruff’s CVD are similar to Gaps 1 and 3 of PZB’s SQ model. This framework is also similar to the customer service audit tools developed by O’Neil and Iveson (1991), Christopher (1992) and Christopher and Yallop (1992).

This is therefore an operational tension between the value or ‘push’ chain and demand or ‘pull’ chain strategic positions that relate directly to cost and value respectively. This tension has seen two different logistics or SC positions develop in the UK. One position is the ‘lean’ production or logistics position associated with Professors Hines and Jones at Cardiff Business School. The other is the ‘agile’ production or logistics position associated with Professors Christopher and Harrison at the Cranfield School of Management.

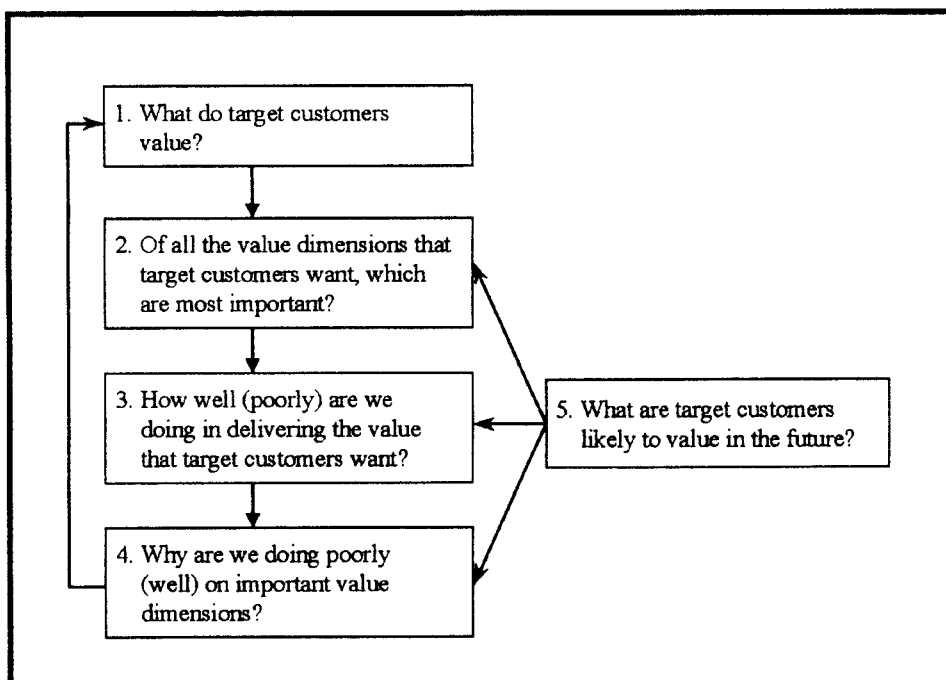


Figure 5.12: Customer Value Determination Process

(Source: Woodruff 1997 p.144)

The 'lean' position considers value creation from a customer's perspective, however focuses on the product and waste surrounding production activities (Hines, Jones and Rich 2001, Jones, Hines and Rich 1997, Lamming 1996). The 'lean' position is based on Ohno's work in Japanese automobile manufacturing, represents an efficiency approach towards logistics or SC activities and encompasses techniques used in just-in-time (JIT), total quality management (TQM) and materials resources planning (MRP) environments.

In contrast, the 'agile' position is a flexible approach to logistics or SC activities that enables rapid response and change and has its origins in flexible manufacturing systems (FMS). It encompasses customer demand and involvement in designing and implementing product manufacturing and supply chains (Christopher 2000, van Hoek, Harrison and Christopher 2001). An examples of an 'agile' supply chains is an efficient consumer response (ECR) system in the food chain.

Although theoretical discussions of both 'lean' and 'agile' positions were developed in the 1990s, they are not entirely new concepts. Bucklin's theory of channel structure is based on two similar concepts: postponement and speculation. Bucklin developed the theory of postponement, however Alderson first proposed the concept of postponement in an article in 1950 (Gill and Allerheiligen 1996).

Postponement entails delaying "changes in the form and identity of a product to the last possible point in time, since risk and uncertainly costs increase as the product becomes more differentiated" (Lambert and Stock 1993 p.79, Stock and Lambert 2001 p.61). This also shifts risk of product ownership up the channel or supply chain towards the last members but reduces costs associated with the risks of manufacturing and holding inventory. Examples include mixing paint colours at a retail store and appliance manufacturers providing different coloured door panels that can be changed when purchased (ibid.).

Speculation is the converse of postponement where a supply chain member assumes various risks as opposed to shifting them. Marketing, logistics and production costs

can be reduced through manufacturing economies of scale, fewer stockouts, efficient transportation and handling of large orders (ibid.). An example would be the production of snow tires in late summer or early autumn in anticipation of the winter season.

The two concepts are different and authors have attempted to choose and defend either an 'agile' or 'lean' position. The environmental differences between the two positions has been described by Christopher as follows:

'Agility' is needed in less predictable environments where demand is volatile and the requirement for variety is high. 'Lean' works best in high volume, low variety and predictable environments (2000 p.39).

However, both environmental situations may be present within one supply chain. An example would be cotton jumpers produced by Benetton (Christopher 2000). Benetton mass-produces certain styles of jumpers in order to decrease costs of production and they are uncoloured and unprinted. Colour dyeing and printing of the jumpers occurs just before they go to market to take advantage of current fashion trends in individual markets. This strategy combines the benefits of both 'lean' and 'agile' as well as speculation and postponement strategies.

This combination of strategies is shown in Figure 5.13 as configured by 'lean' authors. The decision point where a 'lean' or 'push' strategy changes to an 'agile' or 'pull' strategy has been termed the de-coupling point (Christopher 2000). It is the point in the SC where "real demand is made visible... reflects the ongoing requirement in the final market place as close to real-time as possible" and "should also dictate the form in which inventory is held" (Christopher 2000 p.41).

The adoption of both 'lean' and 'agile' strategies in one hybrid SC and the location of the de-coupling point will vary with different product and supply chains (van Hoek, Harrison and Christopher 2001). Flow of product up to the de-coupling point may be forecast-driven whereas flow of product after the de-coupling point should be demand-driven (Christopher 2000).

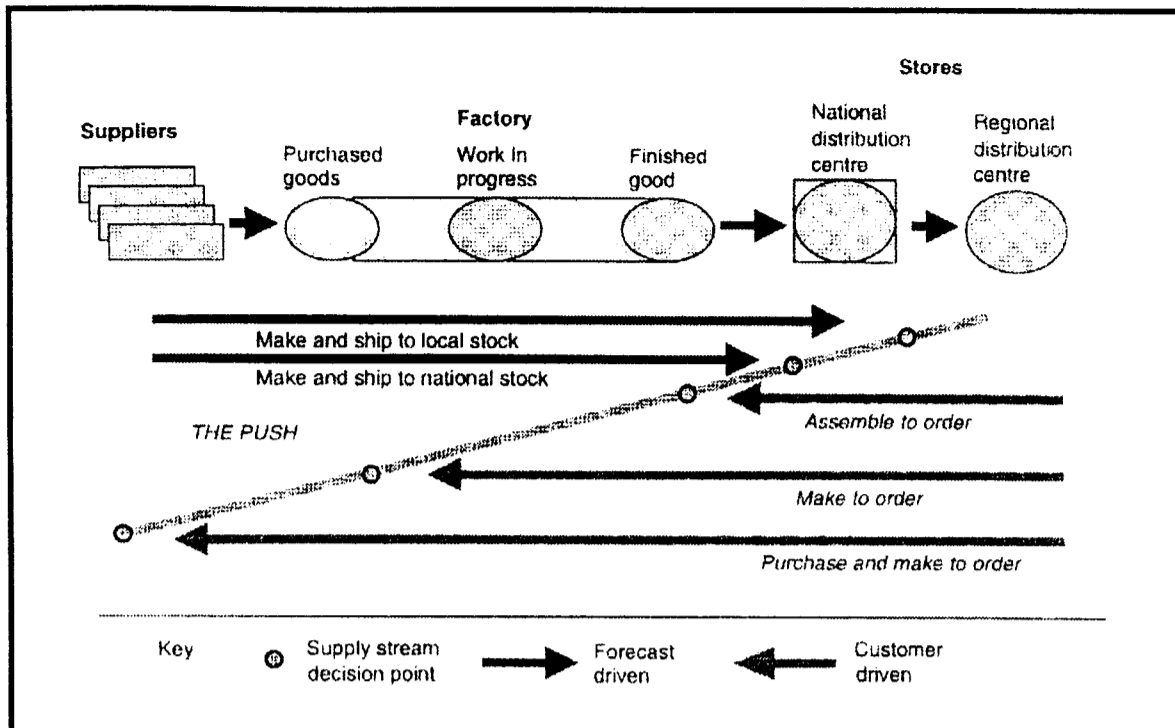


Figure 5.13: Decision Point Analysis – an FMCG example
 (Source: Jones, Hines and Rich 1997 p.167, Hines, Jones and Rich 2001 p.188)

The ability of firms to conduct a hybrid strategy has economic trade-offs between the ‘lean’ and ‘agile’ positions. Trade-offs based on “physical assets, labor, capital and land are most relevant in the functional, lean, environment that is focused on eliminating waste in operational processes” whilst trade-offs based on “time, information and knowledge are more relevant in the innovative, agile, environment” (van Hoek, Harrison and Christopher 2001 p.131).

The ability of firms to develop hybrid SCs also depends upon the flow of information (Christopher 2000, van Hoek, Harrison and Christopher 2001). The need for accurate and timely information is paramount to a firm’s systems approach in logistics (Manrodt and Davis 1993, Gustin, Daugherty and Stank 1995). The availability and quality of information is highly correlated with the successful implementation of integrated logistics systems (Gustin, Daugherty and Stank 1995) that leads to firms that develop a market orientation towards customer satisfaction, collaborations with suppliers, and extended information systems (Hewitt 2000).

The use of technology for gathering information about customer service was discussed in Chapter Three. However, using technology to understand the needs of different customers as well as groups of customers, i.e. market segments, also

requires firms to understand the various trade-offs involved as discussed above (Wilson 1992). Adoption of technology to do so has not been readily embraced, partially due to the lack of 'electronic fulfilment' and 'perfection of execution' that led to the dot-com crash at the end of the 1990s (Lewis 2001). Cox, Chicksand, Ireland and Day (2001) recently surveyed the use of Internet technology in managing SCs in the UK. They found that 77% of 250 respondents have not yet developed any "e-supply strategies... most respondents are currently only using the Internet to gather information and to communicate with suppliers" and "more advanced applications are currently not in use in most organisations" (2001 p.3).

5.5 CONCLUSION

Firms need to generate profits to carry on their business and that entails meeting the needs of all stakeholders, including customers. Empirical studies have provided frameworks and evidence that illustrate parts of a link from customer service→customer satisfaction→loyalty→better firm performance and profitability. The outcome of this link from the customer's perspective should be an increase in perceived customer value. Customer value has emerged as an important concept in business and logistics (Flint and Mentzer 2000). Competitive and market factors in a firm's business environment stipulate that developing competitive advantage "through superior customer value delivery is here to stay" (Woodruff 1997 p.151). However, there is a question as to whether logistics activities provide customer value or whether they are, as characterised by Drucker, just "distribution... a cost area and purely a cost area" (Rutner and Langley 2000 p.73).

Strategic choices for a firm to provide customer value in a logistics or SC context include a value or 'push' approach focusing on costs or a demand or 'pull' approach focusing on customers. The former approach developed by Porter reinforces Drucker's view, whilst the latter approach supports a market orientation. However "it is not clear whether both can be equally successful at creating sustained competitive advantage... are they substitutes in a particular industry or complements, existing literature tends to equivocate" (Morash, Dröge and Vickery 1996 p.2).

The 'lean' versus 'agile' debate in the UK has led to the consideration of a hybrid strategy of the two approaches incorporating the benefits of both. This supports the concept that logistics activities create customer value by allowing a firm to be efficient or 'lean' and effective or 'agile' and therefore able to differentiate itself from competitors (Manrodt and Davis 1993). However, the term customer responsiveness appears in both the 'lean' and 'agile' literature and suggests that a market orientation needs to be predominant in both. For firms, that means understanding and satisfying customer needs as discussed in previous chapters. Over time customers should become more profitable and loyal, which are the hallmarks of an ongoing relationship.

Tansey and Worsley cited OECD 1992 statistics that global production of processed food "amounts to some U.S.\$1.5 trillion, making it one of the world's largest industries" (1995 p.111). The UK food processing industry accounts for gross added value of £56 billion to the UK economy, or 8% of GDP and employs 3.3 million people or 12% of the UK's workforce, excluding the fisheries and aquaculture and catering sectors (Food Chain Group 1999). The impact of logistics on this industry is also substantial. Browne and Allen's survey of 89 food manufacturing and processing firms reported average transport costs in 1996 were "5.6% of total sales revenue" whilst "70% of respondents expected manufacturers to become responsible for ownership of stock" which will have an impact on inventory carrying costs (1997a pp.2-3). They concluded that if efficiency is to be maintained and improved and higher service levels are to be achieved actors in the UK food chain will need to improve information sharing and thus increase the level of relationships in this sector. The next chapter considers the effect of supplier-customer relationships in a logistics context.

CHAPTER SIX

RELATIONSHIPS IN LOGISTICS

6.1 INTRODUCTION

This chapter discusses customer and supplier relationships in logistics in the context of customer service and its resultant output of customer satisfaction. First, the nature of exchange relationships is presented as an important feature of the customer-supplier dyadic exchange being investigated in this study. Next, relationships in logistics are reviewed from a theoretical and empirical perspective. Third, the resulting dichotomy between transactions and relationships is developed and finally, the chapter is concluded.

6.2 THE NATURE OF EXCHANGE RELATIONSHIPS

As noted previously, firms face a number of important challenges in this new millennium with respect to logistics activities (Christopher 1999, Hale 1999, Younger 1997). Customer service was discussed in Chapter Three and its positive impact on a firm's profitability was discussed in Chapter Five. However, managing supplier-customer relations is another of these challenges (Mentzer 1993, Sheth and Sisodia 1999, Kerin and Sethuraman 1999).

A firm needs to provide value-added customer service and be customer-responsive, or market orientated, to differentiate itself in the market and enhance a customer's purchase. Further, a firm needs to acquire and retain customers to buy its products and in turn generate sales revenue and profits. Customers who are satisfied with a

firm's products and customer service should develop increased customer loyalty, repeat and increased purchases, and a propensity towards establishing long-term relationships.

This propensity should improve a firm's financial performance; thus firms are also encouraged to stimulate the development of long-term relationships, or partnerships, with suppliers and customers. The concept of customer relationships becomes important here and this section considers relationships with regards to logistics.

Mentzer argued that "channel relations will hold an ever-increasing importance in the study and practice of logistics in the 21st century" (1993 p.27) and will evolve beyond descriptive and anecdotal considerations. He considered dimensions of relationship management would include "concepts of service quality, value and customer satisfaction" that would require "more interdisciplinary work between logistics, marketing channels and buyer behaviour" (1993 p.39). It thus becomes appropriate to consider existing work on relationships in the marketing discipline.

Although there is currently a debate over their origins (Möller and Halinen 2000), recent conceptions of marketing relationships were developed as extensions to the dyadic exchange paradigm that characterises the marketing concept. Bagozzi (1975), in wanting to address why actors engage in exchange relationships and how exchanges are created and maintained, presented three different types of meanings in marketing exchanges:

utilitarian exchange involving the rational economic behaviour by actors attempting to maximise satisfaction, in full possession of alternatives and free of external influences,
symbolic exchange the mutual transfer of psychological, social or other intangible entities between actors, and
mixed exchange involving aspects of both utilitarian and symbolic which are difficult to isolate.

Bagozzi developed a number of broad research questions concerning these three types of exchanges that included questions pertaining to ongoing relationships, and single dyads versus complex relationship systems. Firms might develop some or all

of these types of relationships with their portfolio of customers. A continuum between transactional and relational anchors has been developed and used by various authors as a means to focus the debate on this subject.

Macneil (1980), writing about contract law, presented an exchange continuum between purely transactional exchanges and relational exchanges. Macneil's continuum essentially incorporates Bagozzi's utilitarian and symbolic exchanges as anchors. Transactional exchanges are considered discrete dyadic exchanges between buyers and sellers with minimal personal relationships and no anticipation or obligation of future exchanges, whilst relational exchanges contain elements of cooperation, sharing and planning between both sides of the dyad, in addition to other relevant actors (Garbarino and Johnson 1999). Purely transactional or discrete exchanges are considered rare implying that some aspects of relationships affect most exchanges, particularly in a legal context (Macneil 1980, Garbarino and Johnson 1999).

Möller and Halinen (2000) argued that examining business exchange relationships is important for understanding contemporary marketing, and provided an analysis of relationship marketing that encapsulates extant literature from the 1970s onwards. Relationship marketing (RM) has been defined as "attracting, maintaining, and – in multi-service organizations – enhancing customer relationships" (Coviello and Brodie 2001 p.382) and as "all marketing activities directed toward establishing, developing and maintaining successful relational exchanges" (Morgan and Hunt 1994 p.22). Such definitions are coincident with concepts presented previously about meeting customer needs and retaining customers in the long term.

The RM phenomenon developed from an interest in business exchange relationships and is derived from four 'root' traditions as shown in Figure 6.1: services marketing, business marketing or the interaction and networks approach associated with the Industrial Marketing and Purchasing (IMP) Group, marketing channels, and database marketing and direct marketing. Each of the four traditions in Figure 6.1 has its own unique perspective towards RM. However, all traditions have an underlying premise

that traditional marketing-mix approaches to transactional exchange are insufficient to allow managers to cope with changing environmental factors. Möller and Halinen thus supported Bagozzi and Macneil's positions that "different exchange characteristics and exchange contexts require different types of relationship marketing... firms have to master several modes of marketing" with respect to relationships (2000 pp.48-49).

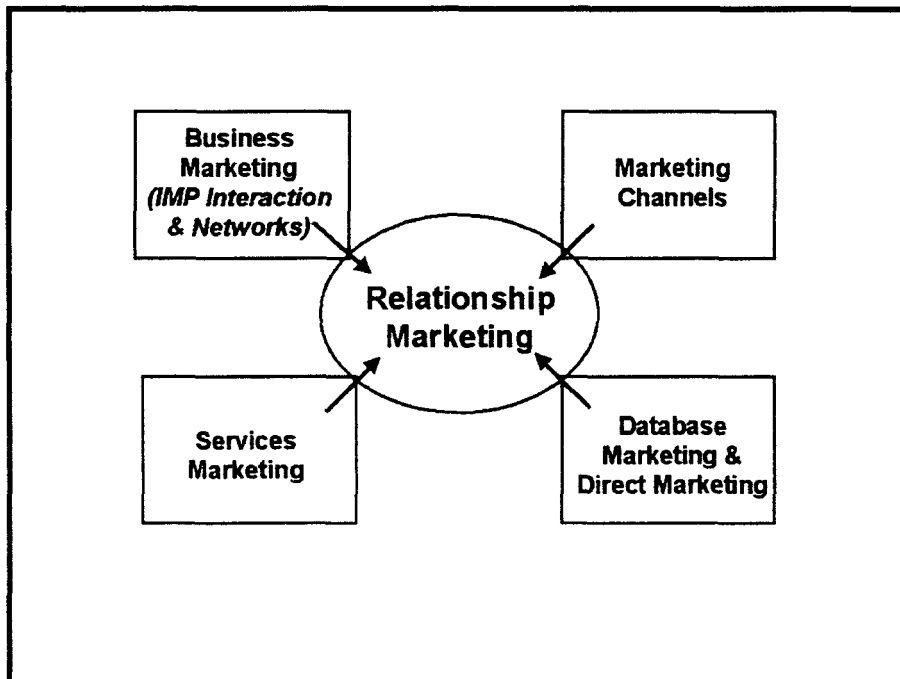


Figure 6.1: Roots of Relationship Marketing

(Source: Möller and Halinen 2000 p.32)

Relationships are built upon trust and commitment from shared values and information, mutual dependence, communication and relationship benefits (Morgan and Hunt 1994, Spekman, Kamauff and Myhr 1998, Stuart 1993, Tate 1996). Relationship benefits that should accrue to both sides of the buyer-supplier dyad include cost reductions, risk sharing, shared creativity, understanding of customer defections and the potential for new business (Bowersox 1988, Cann 1998, Christopher 1997).

Appropriate conditions for establishing relationships include an asymmetry in power or influence by one actor in the dyad, a desire for business stability, the requirement to establish legitimacy, the necessity due to regulation, the usefulness of reciprocity, and the ability to achieve efficiencies (Blois 1996). However, environmental factors affecting relationships include increased competition, more sophisticated and fragmented customers, advancing technology, and the commoditization of products

(Christopher, Payne and Ballantyne 1991, Christopher 1997, Pels, Coviello and Brodie 1999).

Grönroos (1994b, 1997) is one of the originators of RM from a network and actors perspective, which is known as the Nordic School. He argued the network approach “views marketing as an interactive process in a social context where relationship building and management is a vital cornerstone” in contrast to the marketing concept and mix paradigm that is more analytical and “makes the seller the active party and the buyer and consumer passive... no personalized relationship with the producer and marketer of a product is supposed to exist, other than with professional sales representatives in some case” (1994b p.353). Grönroos (1994a) and Brodie, Coviello, Brookes and Little (1997) considered that moving along the continuum from transaction to relationships in a consumer context represents a paradigm shift in marketing philosophy, as advocated by Kuhn (1996).

However, these authors have used Kuhn’s work incorrectly. According to Kuhn, a paradigm is an accepted example of “actual scientific practice – examples which include law, theory, application, and instrumentation together” that provides “models from which spring particular coherent traditions of scientific research” (1996 p.10). The lack of empirical evidence through application and instrumentation does not yet refute the existing paradigm of the marketing concept and thus no shift can be considered to have occurred.

Möller and Halinen argued “that we do not yet have any developed theory of relationship marketing... what we have is a variety of partial descriptions and theories focusing on the broad content of the phenomena” (2000 p.34). Much research has been based on anecdotal evidence rather than systematic research (Garbarino and Johnson 1999), thus there is a paucity of empirical investigation (Naudé and Buttle 2000).

Li and Nicholls (2000) summarised arguments from several authors who do not share in the excitement associated with the RM approach. Lack of universal generalisation,

marketing channel relationships that are becoming less rather than more relational, and misapplication or cursory application of RM techniques were cited as criticisms of this approach. Fournier, Dobscha and Mick reported “customer satisfaction rates in the U.S. are at an all-time low, while complaints, boycotts, and other expressions of consumer discontent rise” (1998 p.43).

There has been considerable discussion of the RM concept in academic and practitioner literature during the 1990s as “one of the more prominent parts of a larger scale re-evaluation of the role and direction of development of marketing” (Christy, Oliver and Penn 1996 p.175). However, it is still in a relatively early development stage and “many fundamental issues are either unaddressed or only inadequately documented” (Li and Nicholls 2000 p.462). RM as “currently practiced has not brought us closer to our customers... instead it has sent us further afield...that endangers the reputation of relationship marketing, calling into question the viability of the entire marketing discipline going forward” (Fournier, Dobscha and Mick 1998 p.51).

Notwithstanding these criticisms, RM’s precepts and characteristics do have meaning for business in general and logistics in particular as a business-to-business activity. Coviello and Brodie’s study (2001) of 94 managers in Canada and 185 managers in New Zealand attending part-time MBA marketing courses found support for similarities between business and consumer marketing, although business-to-business does have some unique aspects such as buyer market structure, demand patterns and buyer behaviours. The next section considers concepts of relationships and RM in a logistics context.

6.3 RELATIONSHIPS IN LOGISTICS

The logistics literature began to call for the development of long-term relationships in the late 1980s, which mirrored discussions in the marketing literature concerning RM. Relationships in logistics are described as natural extensions of customer satisfaction, derived from customer service and efforts to integrate logistics and

supply chain activities (Bowersox 1988, Gardner and Cooper 1988, Anderson and Narus 1990, Christopher, Payne and Ballantyne 1991, Mentzer 1993, McGinnis, Boltic and Kochunny 1994, Christopher 1997).

A partnership is an enhancement of a business-to-business relationship whereby relational actors may invest in each other’s business, undertake joint research and development, or share strategic planning (Bowersox 1988, Gardner and Cooper 1988). A partnership may also take the form of an alliance between a manufacturer, its customers and a 3PL service provider to enjoy a better competitive advantage than a “run-of-the-mill cooperative business arrangement” (Bowersox 1990 p.38).

McIlraith (2000) recently reported on the types of logistics relationships in Europe from a survey of logistics supplier and customers. As shown in Figure 6.2 there was an almost equal split of respondents among ‘traditional’ i.e. transactional, ‘collaborative’ and ‘partnership’ relationships. The survey data was collected from a questionnaire that accompanied applications for the Logistics Europe/KPMG Awards for Excellence in Supply Chain Management and total number of respondents is not reported so the rigour of the results is not apparent. Notwithstanding the biased, self-selected sample, the results indicate that there may be a majority of European firms engaged in some form of relational exchanges.

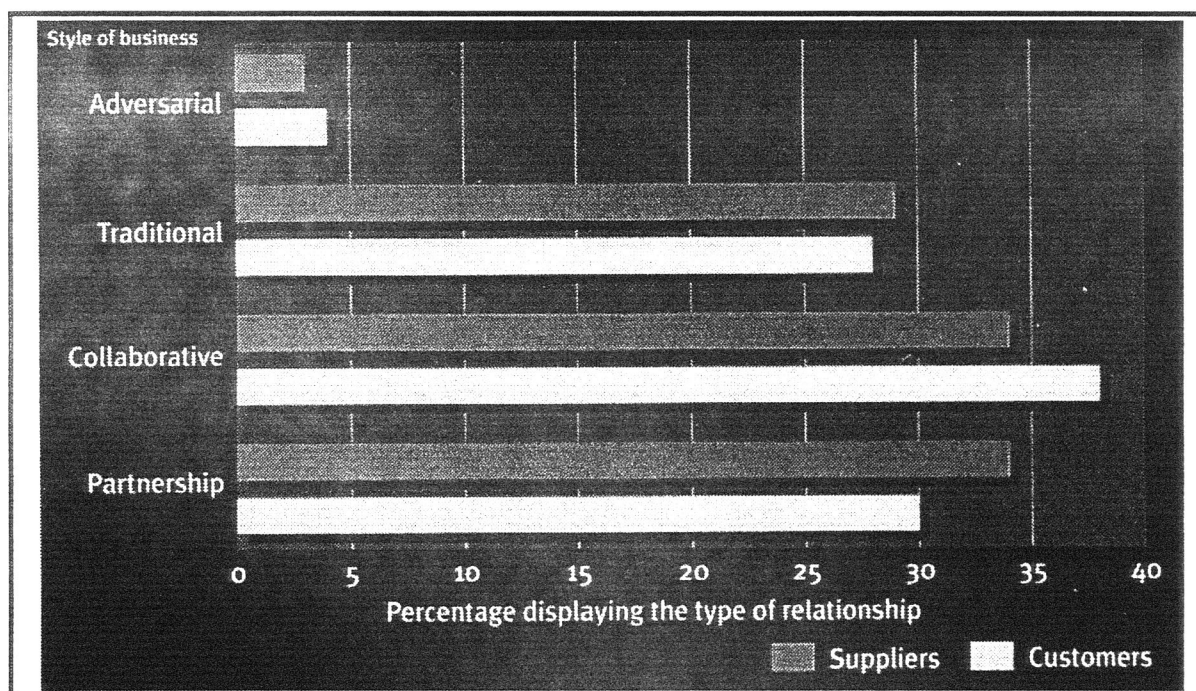


Figure 6.2: Types of Logistics Relationships in Europe
 (Source: McIlraith 2000 p.38)

Hewitt (2000) provided a series of stages for the establishment of relationships in logistics or SCs as shown in Figure 6.3. The third stage of SC process management entails full relational or partnering activities with a focus on customer satisfaction, i.e. effectiveness, process optimisation i.e. efficiency, and performance i.e. profitability. Hewitt’s framework reinforces discussions about the effects of satisfaction on loyalty and presents relationships as outputs of loyalty.

	Management Focus and Priorities	Information Systems Characteristics	Organization Structure	Relationship Characteristics
Stage 1 Fragmented Specialization	<ul style="list-style-type: none"> • Cost • Task Optimization • Departmental Budgets 	<ul style="list-style-type: none"> • Functionally Aligned • Unconnected • Using fragmented data 	<ul style="list-style-type: none"> • Extreme departmentalism • Rigid job definitions • Specialization 	<ul style="list-style-type: none"> • Contractual relationships • Procurement negotiate with supplier • Sales & Service
Stage 2 Functional Integration	<ul style="list-style-type: none"> • Profit • Asset utilization • Eliminating duplication 	<ul style="list-style-type: none"> • MRP/MRP II/DRP • Structured database • Common data 	<ul style="list-style-type: none"> • Integrated Logistics/Materials Management • Wider responsibilities • Looser job definitions 	<ul style="list-style-type: none"> • Still contracted • Some loosening of who deals with customers and suppliers
Stage 3 Supply Chain Process Management	<ul style="list-style-type: none"> • Customer Satisfaction • Process Optimization • Corporate Performance 	<ul style="list-style-type: none"> • ERP • EDI • Industry Standard Data 	<ul style="list-style-type: none"> • De-emphasized functions • Process Orientation • Extend/Intend focus 	<ul style="list-style-type: none"> • Partnering with supplies • Everyone "owns" the customer • Legal relationships de-emphasized

Figure 6.3: Three Stages of Supply Chain Management

(Source: Hewitt 2000 p.11)

Macneil’s exchange continuum (1980) has been presented in different forms regarding business-to-business exchanges that are applicable in a logistics context. Day (2000) argued transactional exchanges would be anonymous and automatic and likely driven by technology, as shown in Figure 6.4.

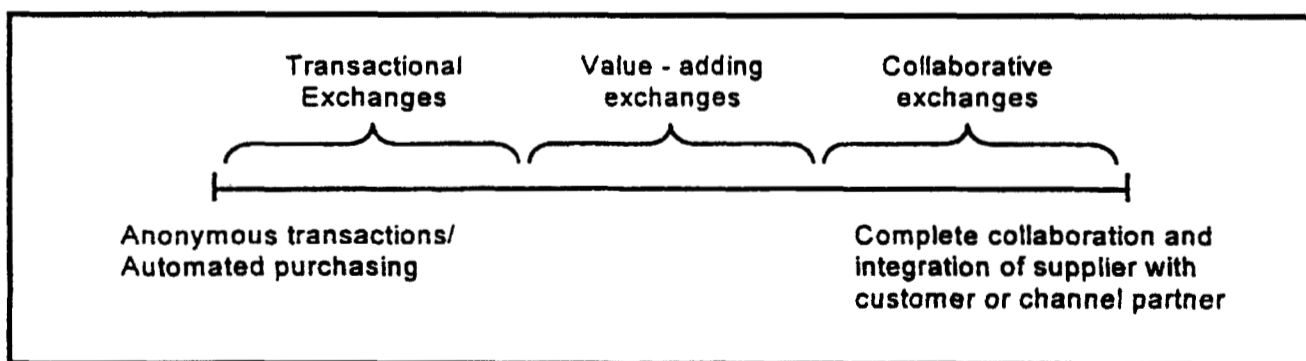


Figure 6.4: The Relationship Spectrum

(Source: Day 2000 p.25)

This routinisation of transactions is most appropriate in commodity markets with certain demand and limited product variation. At the other end of the spectrum,

Day's collaborative exchanges would see "very close information, social, and process linkages, and mutual commitments made in expectation of long-term benefits" (2000 p.24), which is close to vertical integration.

Christy, Oliver and Penn (1996) also considered time an important dimension of relationships together with product differentiation. Their matrix in Figure 6.5 portrays transactions as being short-term, regardless of the type of product offering.

		<i>Timeframe</i>	
		Short Term	Long Term
<i>Transaction Type</i>	Commodity Offering	Commodity Transaction	Call-off Contact
	Differentiated Offering	Premium Transaction	Marketing Relationship

Figure 6.5: Differentiation and Timeframe Matrix

(Source: Christy, Oliver and Penn p.1996 p.179)

Christy, Oliver and Penn further argued customers would be relationship-indifferent with respect to commodity offerings, such as basic groceries. Whilst relationship development is not precluded for commodities "some product-markets will be inherently more likely to develop marketing relationships than others" (1996 p.181).

Lambe, Spekman and Hunt (2000) presented a contrary argument where short-term relational exchanges exist. They have little time to develop, but are relational as "they exhibit high levels of cooperation and collaboration" (2000 p.213). Lambe, Spekman and Hunt termed such relationships interimistic relational exchanges due to their interim or short-lived nature. Their continuum is shown in Figure 6.6. This work was primarily concerned about temporal aspects of the continuum and did not, as the authors noted, focus on the quality of the interactions or relationships.

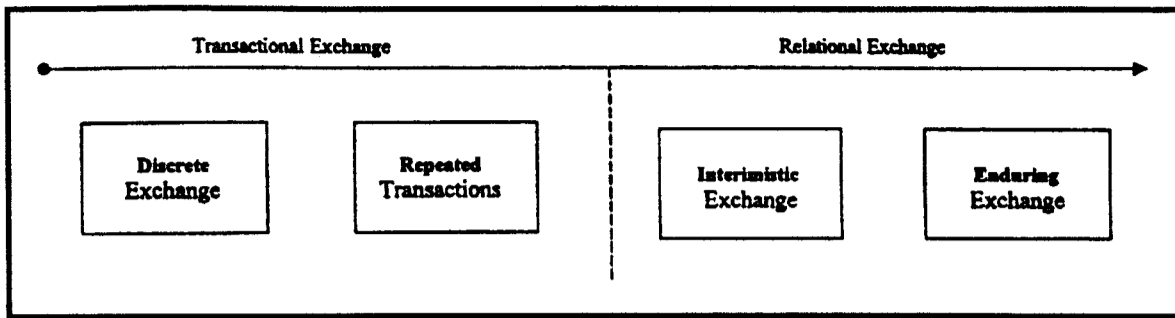


Figure 6.6: The Exchange Continuum and Interimistic Relational Exchange

(Source: Lambe, Spekman and Hunt 2000 p.215)

Figure 6.7 shows three other frameworks for the transaction-relationship continuum derived from an examination of relationship or partnership transition requirements for firms (Spekman, Kamauff and Myhr 1998), the degree of supplier integration desired (Lambert, Emmelhainz and Gardner 1999), and basic buyer-seller exchange considerations (Pels 1999). These frameworks further illustrate the work that has been done on the continuum and all contribute towards an understanding of the characteristics and elements along the continuum particularly in a temporal context.

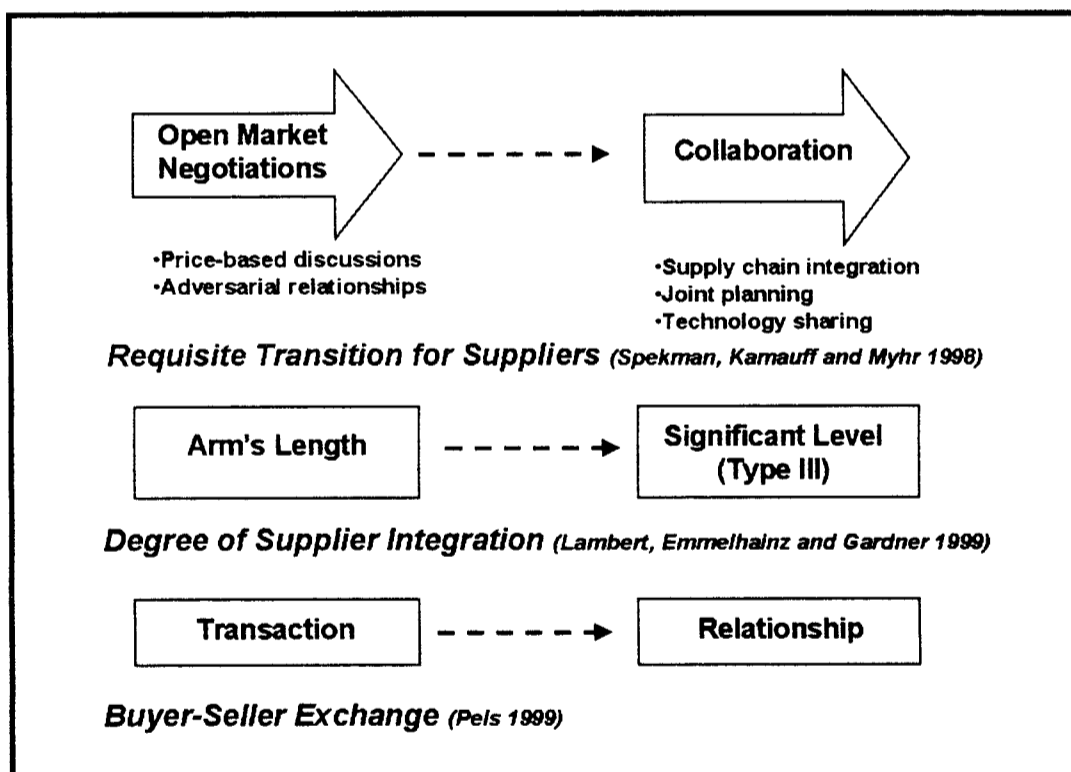


Figure 6.7: Other Frameworks of the Transaction-Relationship Continuum

However, none of these works, except for Spekman, Kamauff and Myhr, empirically tested their concepts. Spekman, Kamauff and Myhr (1998) examined five broad industry groups in terms of respondents' immediate customers and suppliers, a true SC context. Dimensions included supply chain factors, customer service, partner

selection and SCM processes and practices. They found significant differences between a buyer's and supplier's perspective for some variables amongst the dimensions however their work was exploratory and suffers from a small sample size.

Spekman, Kamauff and Myhr only had 132 total respondents, 73 sellers and 59 buyers and dozens of variables across their dimensions. Thus, deep quantitative analysis was not possible and no generalisations could be made to any dimensions or industry sector. They did contribute, however, in terms of general differences between buyer and supplier outlooks.

Naudé and Buttle (2000) noted a general lack of discussion about relationship quality and argued there is not one measure of relationship quality – it is a multidimensional construct. They examined five dimensions in a survey of 40 middle to senior managers attending a management development course: trust, needs satisfaction, integration or coordination, power and profits.

A cluster analysis of respondents was significant for all dimensions however trust and needs satisfaction had higher attribute scores and part-worths. Naudé and Buttle's work was cross-sectional and consisted of a non-random and small sample, and they noted a further need to consider temporal effects as well as macro variables such as industry sectors and general economic conditions. Thus, whilst Naudé and Buttle contributed to the dimensional discussion, they did not square the circle with Lambe, Spekman and Hunt's work.

The dimension of power has been much discussed in the channels of distribution literature, beginning again with the writings of Alderson in 1957. Whilst cooperation and collaboration are necessary in relationships, conflict between actors will arise due to incompatible goals and differing ideas of roles, functions and perceptions of reality (Wilkinson 1996). The use of power by individual channel members is often used to manage conflict and maintain order (Brown, Johnson and Koenig 1995, Wilkinson 1996).

Such considerations have not been significantly examined in logistics or SCM. Cox argued that “the concept of power is rarely discussed in supply chain writing – except to deny it is important or to argue that power should not be used because ‘lean’ approaches should be based on equity, trust and openness” (1999 p.171). In reality however the abuse of power has been found to play an important role in SC integration and relationships, Gaski (1984) has provided a comprehensive discussion of power in marketing channels.

A.T. Kearney’s empirical study of UK practitioners found that power created due to a firm’s size and dominance in the SC is not diminished because that firm chooses to build relationships, “much commercial activity is subject to the rule of force rather than the rule of partnership” (1994 p.14). P-E International’s survey of UK practitioners (1994) determined that an environment of ‘might is right’ exists in dyadic SC partnerships, and that the customer is usually the mightier partner. A.T. Kearney noted FMCG firms routinely threatened suppliers with de-listing and charged them for demand forecast or sales data, “giving a novel meaning to the phrase the ‘customer is king’” (1994 p.15). The magnitude of the use of threat found by A.T. Kearney is graphically shown in Figure 6.8.

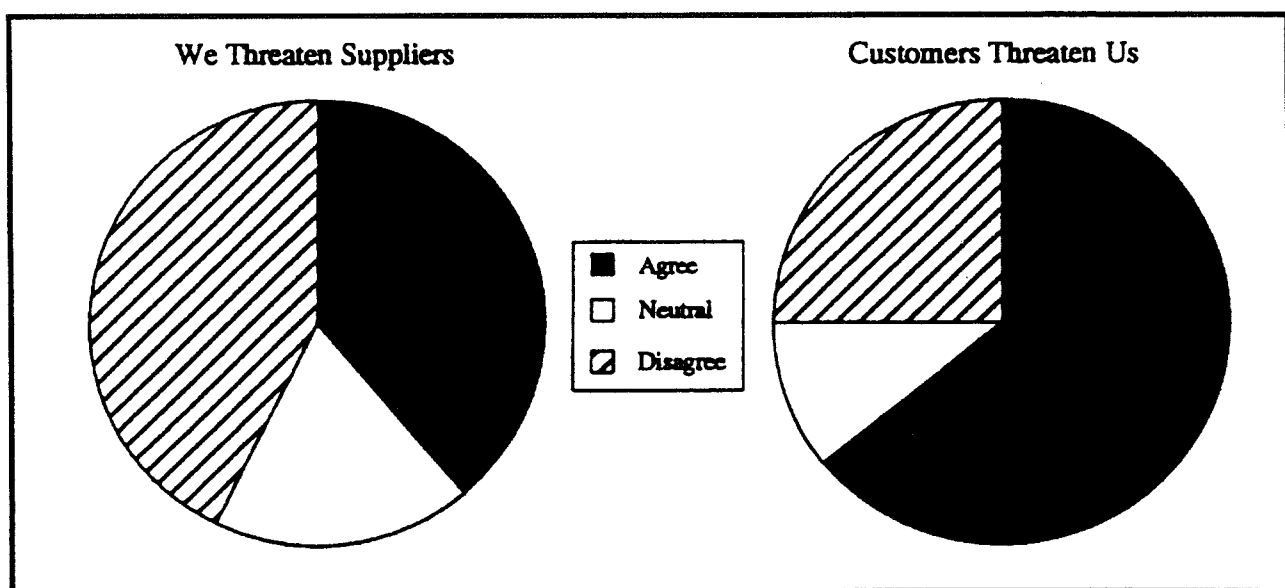


Figure 6.8: Use of Power to Withdraw Business
 (Source: A.T. Kearney 1994 p.15)

Cox (1999) argued that the concept of business is “about appropriating value for oneself, it is not about passing value to customers unless circumstances decree that

this is the only option available to a company in order for it to sustain itself in business” (1999 p.171). His views are contrary to previous discussions regarding value accruing to customers and general bonhomie in relationships.

Cox recommended firms understand the type of business and SC they operate in to map the power structure within the SC as shown in Figure 6.9. By doing so firms should:

- “understand the physical resources that are required within a supply chain to create and deliver a finished product or service to the customer,
- understand the exchange relationship between particular supply chain resources and the flow of revenue in the supply chain, and
- understand what it is about the ownership and control of particular supply chain resources that allows certain resources to command more of the flow of value than others” (1999 p.174).

Cox used the term ‘value’ in place of ‘demand’ that suggests the ‘value’ chain and its control of revenue flow becomes a tool for customers to wield over suppliers in his context. Such a suggestion would not promote mutually beneficial exchanges as regards customer service and satisfaction.

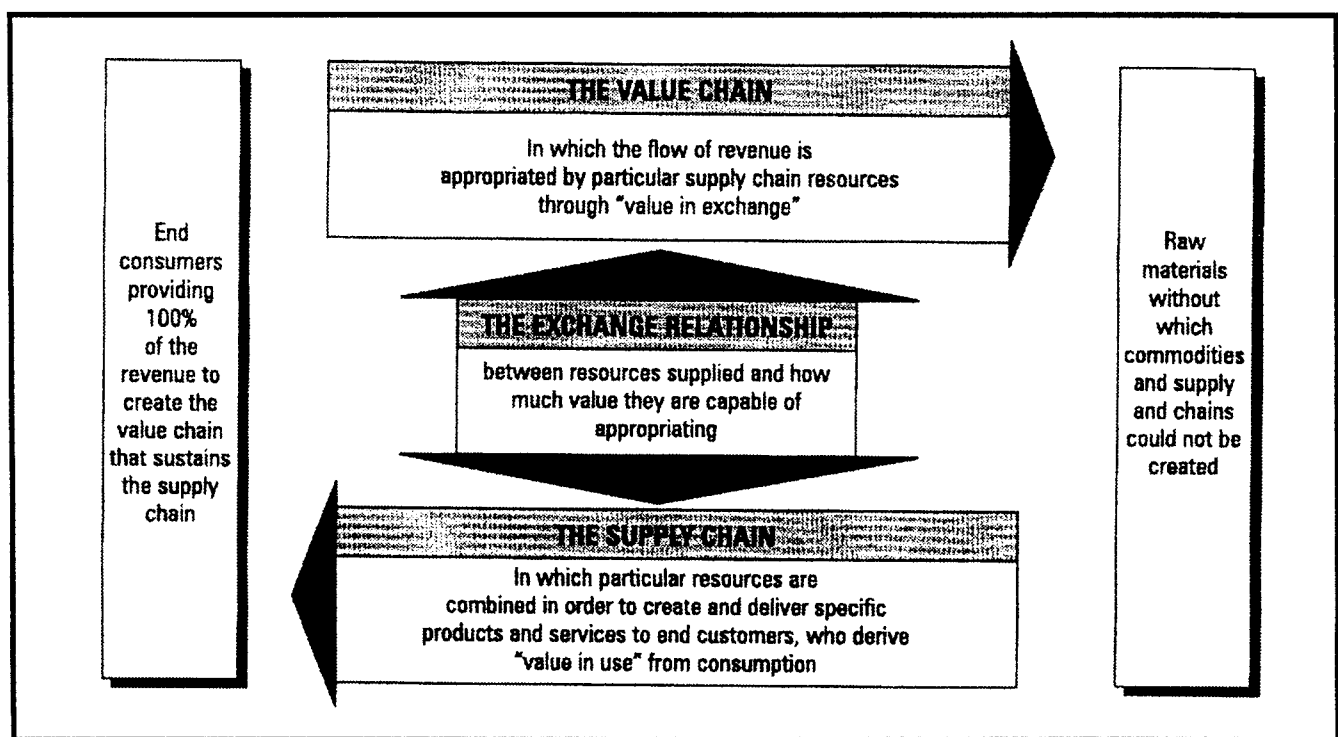


Figure 6.9: Supply and Value Chain Mapping

(Source: Cox 1999 p.174)

There have been several strategies proposed to effect the transition from transactional to relational business interfaces. Two examples are presented here to illustrate this

point. Möller and Halinen (2000) suggested two main managerial modes of relationship marketing: a market-based mode that manages a firm's customer base and a network-based mode that manages interdependencies between business actors. They argued managers have to master and utilise both modes in conjunction with traditional marketing management techniques.

Christopher (1997) proposed firms develop multiple points of connection between various functional areas of suppliers and customers in order to strengthen bonds. These connections would see suppliers becoming preferred for customers and barriers being erected against competitor entry and customer switching. Pels (1999) noted academics have a responsibility to assist practitioners and managers to understand this shift from transactional to relational exchanges in order to help them avoid market myopia.

Relationships or partnerships are thus thought to be important to the logistics and marketing disciplines. They may be a source of competitive advantage for firms to determine their future with their customer and suppliers in an increasingly complex world (Lambert, Emmelhainz and Gardner 1999, Saren and Tzokas 1999).

However, the literature discussed above suggests there might be difficulties with the linkage between customer service and relationship development in logistics. Other empirical studies have shown different behaviours by customers or buyers whereby they focus on transactional issues in customer service while recognising the value and importance of establishing relationships. The next section will present these studies and the transaction-relationship dichotomy as regards customer service.

6.4 THE TRANSACTION-RELATIONSHIP DICHOTOMY

Evidence from several empirical studies of business-to-business interfaces suggest customers in exchange situations might be of two minds and not ready or able to fully embrace relationships or relationship marketing concepts. Assuming relationship theory pre-empts practice as opposed to reflecting it, transition from a

transaction to a relationship focus has been problematic in practice, and there remains a dichotomy between transactional and relational exchanges.

A key feature to the establishment of permanent relationships is a supplier's and a customer's understanding of and willingness to sacrifice short-term advantages for long-term gains (Earp, Harrison and Hunter 1999). However, applications of the definition of RM are often ambiguous and non-specific (Blois 1996, Blois 1998, Earp, Harrison and Hunter 1999, Pressey and Mathews 2000). RM also promises added-value beyond a transactional exchange but does not show how this value is produced (Tzokas and Saren 1997).

Thus, firms and managers judged against competition on short-term performance measures, such as quarterly or annual profitability, might lack the ability or desire to embrace relationships if their purpose is not clear (Ackerman 1996). Managers might also engage in selfish and individualistic behaviour that has significant economic benefits over co-operative relationships but is not conducive to relationship building (Palmer 1999). Such behaviour contradicts a humanist interpretation of relationship marketing that considers individuals to be stable, identifiable and autonomous, and moral due to encompassing wholesome and beneficial values shared by everyone (Smith and Higgins 2000). However, it does not contradict arguments (Pels 1999, Smith and Higgins 2000) that transaction and relationship exchanges are based on different paradigms, notwithstanding some loose interpretations regarding paradigms.

Empirical studies have produced evidence supporting the confusion surrounding transactions and relationships and subsequent behavioural issues of suppliers and customers. These studies also suggest it is primarily customers in an exchange that are less willing to indulge in relationships whilst acknowledging the importance of and need to have them. Hoyt and Huq considered "collaborative and trusting relationships are often counterintuitive to the traditional ways of doing business" (2000 p.751). Other evidence is provided by several failures or dissolution of much publicised logistics partnerships including Laura Ashley and Federal Express and a

Fortune 500 company and its third-party logistics provider (Ackerman 1996, Lambert, Emmelhainz and Gardner 1999).

Campbell (1997) studied firms in the European flexible packaging industry in four partnership categories: customer-centred, political control, personal loyalty and mutual investment. The latter two categories correspond to usual relationships described above. Suppliers had higher percentage responses compared to customers regarding choice in these two categories, while the converse was recorded in the two former categories. She concluded that customers and suppliers do not always agree on the sentiments or behaviours that occur in relationships, and that there was a wide diversity between customers and suppliers about what a partnership entails.

Spekman, Kamauff and Myhr's study (1998) found customers tend to focus on cost-reduction through price, reliability of supply and reduced lead times as key drivers. They also found suppliers less likely to view their own customers and suppliers as irreplaceable and essential to future business. However, they concluded that customers on one level seem to understand the importance of relationships in supply chains but that on another level are uncomfortable with the rhetoric and practice of relationships and easily revert to cost-driven behaviours.

The foregoing suggests academics and practitioners in business generally, and logistics specifically, need to seek better understanding of customer attitudes towards relationships or partnerships. Rather than a Kuhnian paradigm shift as proposed by some authors, this evidence might better indicate a falsification of theory underlying relationships or partnerships as discussed by Popper (1999).

How then can logisticians and marketers go forward to obtain such understanding or explanation? There are three possible suggestions and frameworks in the literature that could provide the basis for further research into this phenomenon. The three frameworks are shown in Figure 6.10. Tzokas and Saren (1997) developed a customer value chain (CVC) that incorporates relationships, technology and the total consumption process as elements to produce value. Akin to Porter's value chain, the

CVC's primary activities include the components of the total consumption process that relate to the purchase needs, evaluation criteria and process. The secondary activities are relationships and the technology. They anticipated the CVC would link to the value chain and would thus illustrate a holistic view of both the firm and its customers and their relationships. They presented their CVC in a strategic and theoretical context and did not operationalise the linkages between the various components in the CVC and value chain. Research using this model of a customer's primary and secondary activities might provide an explanation of the differences between a customer's attitudes and behaviours towards relationships and transactions.

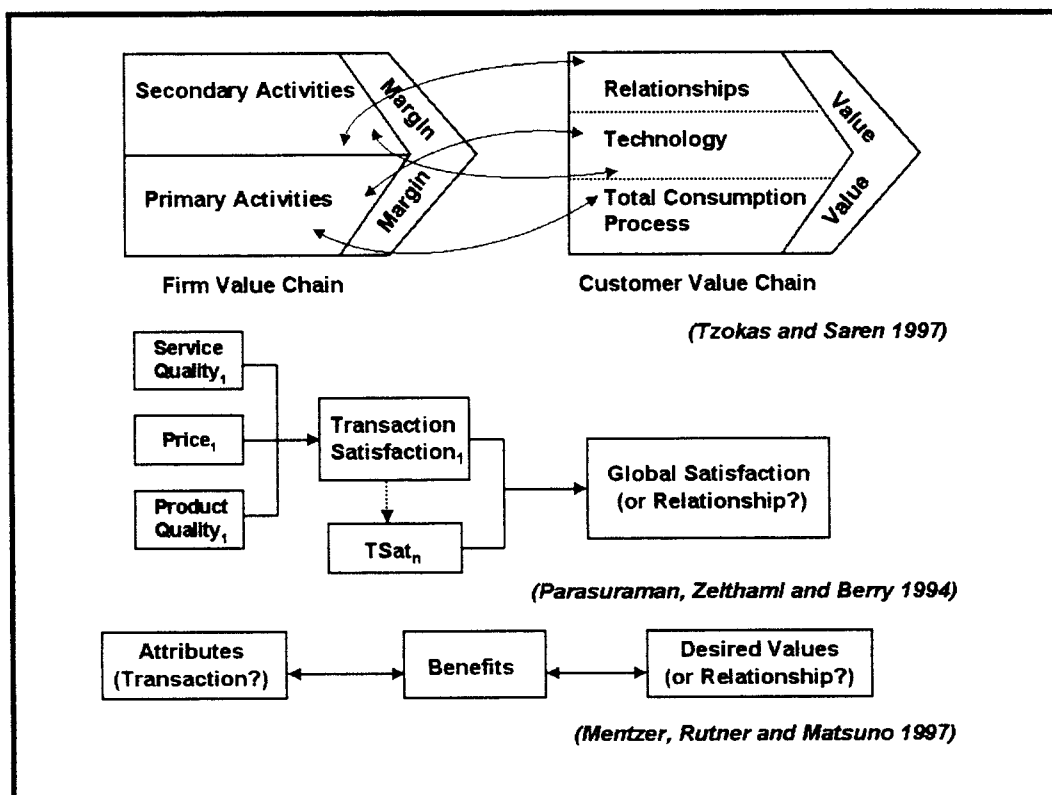


Figure 6.10: Possible Frameworks for Customer Service – Relationship Research

PZB (1994), in a response to criticism of the SERVQUAL model, developed a transaction-specific model that attempts to describe a customer's global satisfaction in terms of the sum of a number of specific transactions. Research using this construct of global customer satisfaction might find it analogous to long-term relationship behaviour that reflects ongoing satisfaction with discrete transactions, predicated upon the evaluation of components of service quality, price and product quality.

Mentzer, Rutner and Matsuno (1997) introduced the means-end value hierarchy model (MEHVM) to logistics research as a methodology for understanding both the needs and values of customers in the supply chain. The MEHVM is an interrelated network that considers customer motivation in terms of their values that result from product/service benefits or consequences provided by specific product/service attributes. The MEHVM has its origins in the marketing literature and is a hierarchical model where a customer's overarching values determine the benefits sought, that in turn determine what attributes are required to realise these benefits. Research using this methodology might explain the different levels of customer behaviour regarding transactions and relationships.

Rutner and Langley (2000) developed an enhanced MEHVM shown in Figure 6.11 based on previous modelling by other authors and from their own empirical surveying of approximately 100 companies with open-ended questions on logistics value. Their model proposes certain customer service variables as service attributes, customer service, quality, SCM, profitability and relationship building as the consequences or benefits for the customer resulting from the attributes, and logistics value as the overarching customer value. Rutner and Langley did not empirically test this model but used it to delineate definitions of logistics value and logistics value-added. These frameworks are proposed as possible methods to investigate the phenomenon regarding transactions and relationships in logistics.

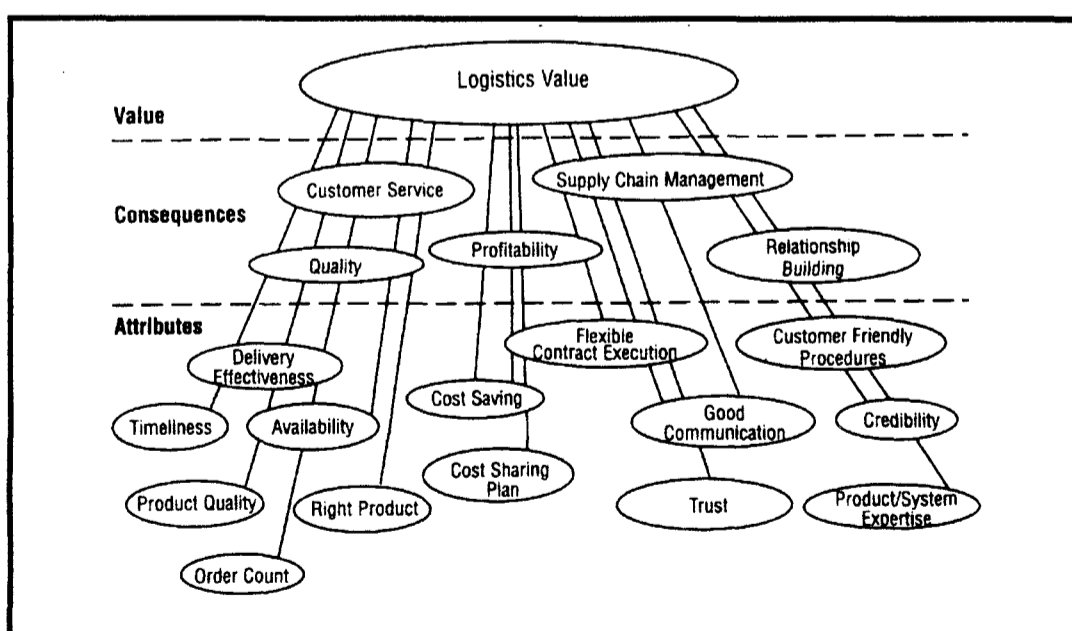


Figure 6.11: Means-End Value Hierarchy Model of Logistics Value
 (Source: Rutner and Langley 2000 p.79)

6.5 CONCLUSION

Customer service in logistics continues to be an important research and practical topic. Evidence presented in Chapter Three suggests that variables important to customers may be transactional in nature, and evidence presented in the previous section indicates that cost reduction, as regards product price or associated service costs may be a key variable for customers.

The marketing and logistics literature on relationships outlines potential benefits available to customers and suppliers entering into such arrangements. These include the important benefit of providing increased long-term profits that is fundamental to a firm's success. However, limited empirical evidence suggests that customers do not appear willing to embrace relationships as readily as suppliers do and appear to revert to purchase behaviours related to their key transactional concerns over cost. Such behaviour is not easily explained within existing theoretical concepts of relationships or relationship marketing. Some literature calls for establishing relationships with suppliers in order to build trust and loyalty, develop effective long-term strategies, and be pro-active to customers' needs. However, other literature suggests there may be other factors at work that could affect the requirement to establish relationships.

Grönroos (1997) reviewed relational versus transactional intentions within the supplier-customer dyad. He argued that whilst latent relationships exist in the dyad, actors in it would only enter into a relationship if they perceived it to be beneficial. Tzokas and Saren (1997) also suggested customers would become involved in a relationship process to ensure they received long-term value.

Dawson and Shaw (1990) examined changes in the supplier-retailer dyad and proposed a continuum of relationships that runs from transactional to fully integrated. Relationships towards the latter end of the continuum may develop as a result of a changing business environment, emerging techniques for SCM, and the development of distribution technology. It is clear that retailers are the progenitors of

such integration, particularly in the food processing industry. The IGD and others (Ferne, Pfab and Marchant 2000, Alvarado and Kotzab 2001) have promoted the benefits of closer supplier-retailer integration, technological advancements and relationships in the UK food chain resulting from increased retailer concentration. However, other authors have criticised this concentration on grounds of coercive power and retailer motives (Shaw and Gibbs 1995, Tansey and Worsley 1995, P-E International 1996, Food Chain Group 1999). Tansey and Worsley argued that:

Small farmers and workers must compete with large and powerful users of their products and services. Large manufacturers, especially in the UK, have found themselves supplying increasingly powerful retailers who are able to set terms and drop their products if they fail to meet retailers' sales standard. Retailers themselves might find their role changing, however, with the use of interactive technology now becoming available in the store and home. This may raise the question of who is the middleman. Whatever happens there is a fascinating battle going on for who processes – in the factory, home or small business – the food that goes into people's stomachs world-wide (1995 p.141).

What are the important benefits and elements of logistics customer service for customers? How can suppliers tap these variables? The next chapter examines existing empirical studies in logistics.

CHAPTER SEVEN

EXISTING EMPIRICAL RESEARCH AND PROPOSED RESEARCH QUESTIONS

7.1 INTRODUCTION

This chapter reviews empirical studies in the areas of customer service, customer satisfaction and service quality in logistics to examine work done to date, contributions and shortcomings. First, the method of review will be discussed and the 59 references analysed to determine appropriate empirical studies. Second, the 22 empirical studies selected will be categorised and analysed regarding their contribution. Finally, key findings and disparities in the empirical studies and literature are summarised and a research model and questions are proposed for this thesis to conclude this chapter and background literature section.

7.2 REVIEW METHOD AND PRESENTATION OF EMPIRICAL STUDIES

How has empirical research examined customer service phenomena in logistics, and what developments in customer service theory and practices have emerged? The extant literature in various academic journals, texts, and practitioner publications was reviewed for relevant articles on customer service, satisfaction and service quality in logistics. Academic articles containing empirical studies of important customer service variables were primary targets to develop a battery of customer service items for this study. Fifty-nine references were found and are noted in Table 7.1.

Author (Year)	
Bienstock, Mentzer and Bird (1997)	McGinnis, Boltic and Kochunny (1994)
Blanding (1992)	Maltz and Maltz (1998)
Boitout (1997)	Manrodt and Davis (1993)
Byrne (1992)	Markham and Aurik (1993)
Christopher (1986)	Mentzer, Flint and Hult (2001)
Christopher and Yallop (1992)	Mentzer, Flint and Kent (1999)
Christopher (1998)	Mentzer, Gomes and Krapfel (1989)
Collins, Henchion and O'Reilly (2001)	Mentzer and Kahn (1995)
Daugherty, Ellinger and Plair (1997)	Morash, Dröge and Vickery (1996)
Daugherty, Sabath and Rogers (1992)	Morris and Davis (1992)
Daugherty, Stank and Ellinger (1998)	Müller (1991)
Dempsey and Lancioni (1989)	Nagel and Cilliers (1990)
Donaldson (1995)	NatWest (1994)
Donaldson and Fletcher (1994)	Perkins (1993)
Dresner and Xu (1995)	Perrault and Russ (1976)
Emerson and Grimm (1996)	Pisharodi and Langley (1990)
Emerson and Grimm (1998)	Pisharodi and Langley (1991)
Emerson and Grimm (1999)	Rinehart, Cooper and Wagenheim (1989)
Gilmour, Borg, Duffy, Johnston, Limbek and Shaw (1994)	Sabath (1978)
Hill (1994)	Schary (1992)
Hoffman and Bateson (1997)	Sharma, Grewal and Levy (1995)
Holcomb (1994)	Sparks (1990/91)
Hummel and Savitt (1988)	Stank, Daugherty and Ellinger (1998)
Innis and La Londe (1994)	Sterling and Lambert (1987)
Kent and Flint (1997)	Sterling and Lambert (1989)
Kyj and Kyj (1989)	Stock and Lambert (2001)
La Londe and Zinszer (1976)	Tucker (1983)
Lambert and Harrington (1989)	Williams Walton (1996)
Lambert and Stock (1993)	Younger (1997)
Langley and Holcomb (1992)	

Table 7.1: Articles Examined Regarding Logistics Customer Service and Satisfaction

In that set, twenty articles were selected that featured relevant empirical testing and two articles were selected that contributed theoretical constructs and models. An examination of citation frequency within all 22 articles was used to follow threads of research activity based on prior theoretical or empirical work in an attempt to determine the current theoretical position in the logistics discipline.

This examination did not consider citations within the other 37 articles in the original set, however a content analysis of their references found evidence to support this approach. For example, the La Londe and Zinszer (1976) monograph was cited by 15 of the 20 subsequent articles in the selected set and was also cited by over 60% of the other 37 articles.

Table 7.2 presents the selected set of 22 articles and the frequency of citation for these articles within that set. The articles are presented chronologically and the matrix of citation naturally decreases to the right.

La Londe and Zinszer (1976) were cited 15 times as noted above whilst Perrault and Russ (1976) were cited 13 times each in the other references. These two articles appear to be the most significant articles for reference by other researchers. Sterling and Lambert (1987) were next with 10 citations, followed by Gilmour, Borg, Duffy, Johnston, Limbek and Shaw (1994) with 8 citations in the article's various guises and Mentzer, Gomes and Krapfel (1989) with 7 citations. These frequencies suggest these specific works are important to the debate and thus cover significant theoretical or empirical ground.

Subsequent articles make good use of these five works but surprisingly do not make substantial use of other works in this selected set. This lack of citation suggests authors prefer to reference these works and perhaps consider them seminal. Alternatively, it might suggest authors are not following any logical progression in their research to build on previous knowledge. This situation would lead to redundant research and no significant theory building in the discipline

Summary details of the 22 articles are presented chronologically in Table 7.3. The first column lists the author(s) and year of publication. The second column contains comments on the study purpose, contributions and shortcomings. The third column notes the research design undertaken by the author(s) whilst the fourth column lists the study's final research sample and response used for analysis. The fifth column notes measurement used for data collection and the last column lists statistical analysis techniques used.

Authors (Year)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
1 Perreault and Russ (1976)	-																						
2 La Londe and Zinszer (1976)	√	-																					
3 Gilmour, Borg, Duffy, Johnston, Limbek and Shaw (1977, 1982, 1994)	√		-																				
4 Sterling and Lambert (1987)	√	√	√	-																			
5 Kyj and Kyj (1989)	√				-																		
6 Lambert and Harrington (1989)	√	√		√		-																	
7 Mentzer, Gomes and Krapfel (1989)	√	√	√				-																
8 Rinehart, Cooper and Wagenheim (1989)	√	√	√	√				-															
9 Sterling and Lambert (1989)	√	√	√	√					-														
10 Pisharodi and Langley (1991)	√	√	√	√						-													
11 Morris and Davis (1992)	√	√	√	√				√			-												
12 Innis and La Londe (1994)	√	√	√	√			√	√				-											
13 Holcomb (1994)	√												-										
14 Dresner and Xu (1995)	√			√					√					-									
15 Donaldson (1995)	√	√	√	√	√					√					-								
16 Emerson and Grimm (1996)	√	√	√	√	√	√					√					-							
17 Bienstock, Mentzer and Bird (1997)	√		√				√										-						
18 Daugherty, Stank and Ellinger (1998)	√		√	√							√				√			-					
19 Maltz and Maltz (1998)	√	√	√	√	√	√					√					√			-				
20 Mentzer, Flint and Kent (1999)	√	√	√	√			√	√									√			-			
21 Collins, Henchion and O'Reilly (2001)	√	√	√	√	√		√	√		√					√						-		
22 Mentzer, Flint and Hult (2001)	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	-
Total Frequency of Citations	13	15	8	10	3	2	7	3	0	1	2	3	1	0	1	1	3	0	0	1	0	1	0

Table 7.2: Frequency of Logistics Customer Service and Satisfaction Article Citations

The Mentzer, Gomes and Krapfel (1989) and Rinehart, Cooper and Wagenheim (1989) articles did not undertake any empirical studies but did contribute theoretical models that were utilised in later empirical work. As noted above, the Mentzer, Gomes and Krapfel article was cited 7 times whilst the Rinehart, Cooper and Wagenheim article was cited 3 times.

Eighteen of the remaining 20 articles (90%) utilised mail or hand delivered surveys for final data collection whilst 8 of those articles (40%) used some form of qualitative data collection in advance of the final study. One study used personal interviews alone (Gilmour, Borg, Duffy, Johnston, Limbek and Shaw 1994), and one study used only secondary data conducted via desk research (Dresner and Xu 1995).

Study samples were equally split between many industry sectors (average size of 1,087) and specific industrial groups sectors (average size of 190) in the 20 empirical articles. However the Sterling and Lambert studies of 1987 and 1989 were the same and used the same data. Also, it is unclear whether the Mentzer, Flint and Hult (2001) study of the U.S. Defense Logistics Agency used different data and respondents then the Mentzer, Flint and Kent (1999) study of the same organisation.

Data from the 18 surveys was collected as ordinal or interval data using either 5 or 7 point Likert-type rating scales, along with usual nominal demographic and categorisation data. The treatment of ordinal data as interval data was not discussed in any of the articles. Statistical analysis techniques reported include descriptive means, standard deviations, rankings and chi square or t-tests of rating scale data (18 articles), exploratory factor analysis (12), confirmatory factor analysis (3), multiple regression (7) and canonical correlation analysis (2).

Authors (Year)	Comments	Research Design	Final Sample	Measurement	Statistical Analysis
Perrault and Russ (1976)	Examined 9 items of customer service (CS) across 6 product types to determine importance of physical distribution (PD) service, its determinants and resulting satisfaction, no statistical testing or construct development	Mail survey questionnaire, some personal interviews	Industrial purchasing managers in USA (n=216, 56% RR)	Ordinal data from 7 point rating scales, nominal data from classification questions	CS item means and correlations, percentages of classification data
La Londe and Zinszer (1976)	Conducted extensive study of PDCS items and proposed constructs of pre- transaction, transaction and post- transaction, proposed prescriptive CS model, no statistical or construct testing	Two-stage with personal interviews and three waves of mail survey questionnaires	Members of NCPDM across 14 industrial and functional areas in USA (n=743, 30% RR overall)	Ordinal data from 5 point rating scales, nominal data from classification questions	CS item means and correlations, percentages of classification data
Gilmour et al. (1994, 1982, 1977)	Developed battery of CS items amongst respondents and then had respondents rank the items according to importance, found differences of importance amongst suppliers and various customer segments, no statistical testing or construct development	Two-stage personal interviews	6 suppliers and 32 customers in Australian scientific instrument industry	Ordinal data from interview questions and item selection lists	CS item importance by rank
Sterling and Lambert (1987)	Tested hypothesis that marketing mix components contribute equally to business share allocated to manufacturers by customers, hypothesis rejected, provided statistically significant list of important CS items and categorised them with factors or constructs of marketing or PD, no confirmatory analysis or other constructs	Two-stage with personal interviews and mail survey questionnaire	Office furniture and systems designers, intermediaries and end users in USA (n=562, 22% RR overall)	Interval data from rating scales (type not reported), nominal data from classification questions	CS items and importance means, exploratory factor analysis and stepwise multiple regressions to categorise items as PD or marketing
Kyj and Kyj (1989)	Examined CS items as element of firm's marketing strategy, found demand and perceptions of importance for CS items heterogeneous across sample groups studied, no constructs developed	Mail survey questionnaire	Industrial product manufacturers and customers across 6 different product types in USA (n=169, 20% RR)	Interval data from 7 point rating scales, nominal data from classification questions	CS items and importance means and std deviations, ANOVA differences between manufacturer and customer groups

Table 7.3: Logistics Customer Service, Satisfaction and Service Quality Article Details (continued...)

Authors (Year)	Comments	Research Design	Final Sample	Measurement	Statistical Analysis
Lambert and Harrington (1989)	Replicated Sterling and Lambert (1987) study in plastics industry. Found support for original methodology and 6 common important CS items across both studies, categorised statistically significant list of important CS items with factors or constructs of marketing or PD, no consideration of separate constructs or confirmatory analysis	Two-stage with personal interviews and mail survey questionnaire	Plastics manufacturers and end users in USA (n=540, 29% RR overall)	Interval data from rating scales (type not reported), nominal data from classification questions	CS items and importance means, exploratory factor analysis and stepwise multiple regressions to categorise items as PD or marketing
Mentzer, Gomes and Krapfel (1989)	Presented major constructs of PD service as availability, timeliness, and quality based on literature review and proposed CS and satisfaction conceptual model with PD and marketing components, no empirical study undertaken to test model	N/A	N/A	N/A	N/A
Rinehart, Cooper and Wagenheim (1989)	Discussed integration of logistics and marketing to effect CS, and presented CS items according to 4 functions of PD and 4 mix functions of marketing, no empirical testing of items or functions as constructs	N/A	N/A	N/A	N/A
Sterling and Lambert (1989)	Reviewed development of CS research and repeated Sterling and Lambert (1987) methodology and study for integrating CS and marketing, added 3 negative hypotheses regarding business share and target market segments, all hypotheses 'generally rejected', concluded there are significant relationships as regards share of business and target market segments, no consideration of separate constructs or confirmatory analysis	Two-stage with personal interviews and mail survey questionnaire	Office furniture and systems designers, intermediaries and end users in USA (n=562, 22% RR overall)	Interval data from rating scales (type not reported), nominal data from classification questions	CS items and importance means, exploratory factor analysis of CS items and stepwise multiple regressions to categorise items as PD or marketing

Table 7.3: Logistics Customer Service, Satisfaction and Service Quality Article Details (continued...)

Authors (Year)	Comments	Research Design	Final Sample	Measurement	Statistical Analysis
Pisharodi and Langley (1991)	Tested interset association hypotheses between CS perceptions and market response for both customers and suppliers using CS items developed by La Londe and Zinszer (1976), found support for association by customers and strength of customers versus suppliers, small sample size for statistical analysis, no constructs developed	Two-stage mail survey questionnaire	Suppliers and customers in grocery manufacturing in USA (n=89, 59% RR)	Ratio data from actual firm CS and business performance	Canonical correlation analysis of perception and market response items
Morris and Davis (1992)	Tested CS items against dimensions of firm descriptors of CS and business performance, 3 descriptors of CS emerged: definitional, management and measurement, found CS items loaded onto La Londe and Zinszer (1976) constructs, found relationship between firm size and proactive management and management audits of CS and between firm performance and management of CS, small sample size for statistical analysis	Mail survey questionnaire	Industrial marketing managers across all industries in Florida (n=90, 22% RR)	Ordinal data from 5 point rating scales, nominal data from classification questions	CS items and importance means, exploratory factor analysis and MANOVA of CS items to develop constructs and relationships among dimensions
Innis and La Londe (1994)	Tested hypotheses relating to influence of CS on satisfaction, purchase/repurchase intentions and attitudes for 2 suppliers, hypotheses 'partially supported' for all 3 dimensions, proposed model of sales as output of PDCS and 3 marketing mix dimensions of product, place and promotion, CS items clustered arbitrarily and some items removed with low alpha reliability levels, no consideration of constructs from statistical analysis	Mail survey questionnaire	Auto glass retailers in USA (n=138 18% RR)	Ordinal data from 7 point rating scales, nominal data from classification questions	CS items and importance means, multiple regression of 3 dimensions as IVs and two companies as DVs

Table 7.3: Logistics Customer Service, Satisfaction and Service Quality Article Details (cont'd. on next page)

Authors (Year)	Comments	Research Design	Final Sample	Measurement	Statistical Analysis
Holcomb (1994)	Utilised Sterling and Lambert (1987) methodology to test CS from quality and cost perspectives using Taguchi parameters, proposed model for cost and quality trade-offs, presentation of research disjointed and some RD and analysis information lacking	Mail survey questionnaire	Industrial buyers (n=44, 20% RR) and warehouses (n=?, 23% RR) in USA with 21% overall RR	Ordinal data from 7 point rating scales, nominal data from classification and ranking questions	CS items and importance means, exploratory factor analysis of CS items and canonical analysis for customer clusters
Dresner and Xu (1995)	Tested hypotheses regarding effect of 3 CS items and complaints as surrogate for satisfaction profitability, found strong support for their regression model, small sample industry, satisfaction measure limited, conclusions unclear as to cause and effect	Desk research of existing financial and operational data	13 major USA airlines	Ratio data collected from secondary sources	Two-stage multiple regression of 3 CS items and satisfaction as IVs and profit as DV
Donaldson (1995)	Tested 4 propositions about CS in manufacturing firms and support found for 3 propositions: CS is increasing in importance, is a source of competitive advantage and firms with commitment to CS are above-average performers, developed 4 factors from CS items related to transaction, post-transaction, firm competence and price constructs, limited number of CS items considered in development of battery and factor analysis variance explained low for latter two factors	Mail survey questionnaire	Manufacturing firms across all sectors in Scotland (n=180, 38% RR)	Interval data from 5 point rating scales, nominal data from classification and ranking questions	CS items and importance means, exploratory factor analysis of CS items to develop constructs

Table 7.3: Logistics Customer Service, Satisfaction and Service Quality Article Details (continued...)

Authors (Year)	Comments	Research Design	Final Sample	Measurement	Statistical Analysis
Emerson and Grimm (1996)	Tested validity of Mentzer, Gomes and Krapfel (1989) model across CS items, found three PD (availability, delivery quality and communication) and four marketing (price, sales reps, CS reps and quality) dimensions or constructs, did not fully support MGK's 3 proposed dimensions, analysis lacking some quantitative details as regards rigour	Mail survey questionnaire	Power tool retailers in USA (n=230, 38% RR)	Interval data from 5 point rating scales, nominal data from classification and ranking questions	CS items and importance means, exploratory factor analysis of CS items to develop constructs
Bienstock, Mentzer and Bird (1997)	Developed and tested model of PD service quality (PDSQ) based on Churchill's (1979) guidelines for construct development, found 3 constructs of timeliness, availability and condition that supports MGK's (1989) proposed constructs, wide variety of industrial sectors, used SERVQUAL-style indicators	Personal interviews and two-stage mail survey questionnaire	NAPM members in USA (n=406, 51% RR)	Interval data from 7 point rating scales, nominal data from classification and ranking questions	CS items and importance means, exploratory and confirmatory factor analysis of CS items to develop constructs
Daugherty, Stank and Ellinger (1998)	Tested 3 hypotheses of 4 constructs and proposed model of PDCS → satisfaction, satisfaction → loyalty, and loyalty → market share, did not support premise of model and hypothesis of loyalty → market share rejected, little information given regarding selection of few CS, satisfaction and loyalty items used in study	Two-stage telephone and mail survey questionnaire	Personal care product retail buyers in USA (n=99, 50% RR)	Interval data from 7 point rating scales, nominal data from classification and ranking questions	Item means, exploratory factor analysis of items to confirm constructs and present correlations, two-stage multiple regression of 4 constructs
Maltz and Maltz (1998)	Tested 7 hypotheses of CS performance as function of manufacturer and distributor activities using objective service performance and perceptual channel responsiveness data. Found limited support for 6 hypotheses across 4 CS constructs of responsiveness, cycle time, on-time delivery and inventory availability, did not study customers	Two-stage mail survey questionnaire	Distributors of medical products and industrial equipment and supplies in USA (n=484, 33% RR)	Interval data from 5 point rating scales, nominal data from classification and ranking questions	Item means, exploratory factor analysis of items to confirm constructs and present correlations, two-stage regression of 4 constructs

Table 7.3: Logistics Customer Service, Satisfaction and Service Quality Article Details (continued...)

Authors (Year)	Comments	Research Design	Final Sample	Measurement	Statistical Analysis
Mentzer, Flint and Kent (1999)	Extended Bienstock, Mentzer and Bird's (1997) model of PDSQ to one focal firm, found 9 constructs related to new model of LSQ, 6 constructs relate to ordering, 2 relate to information and personnel quality and 1 relates to timeliness, latter constructs support 2 of MGK's (1989) dimensions of PDCS, supplier is USA government defense logistics agency, large sample but customer base limited to types of CS needs	Personal interviews and two-stage mail survey questionnaire	DLA customers in USA (n=5,531, 33% RR)	Interval data from 5 point rating scales, nominal data from classification and ranking questions	CS items and importance means, exploratory and confirmatory factor analysis of CS items to develop constructs
Collins, Henchion and O'Reilly (2001)	Tested expectations and performance UK retail grocers of CS provided by Irish and non-Irish food manufacturers, found Irish food manufacturers lag non-Irish manufacturers in application of CS activities, limited data collection, study analysis and sample	Hand-delivered survey questionnaire	18 total buyers in 4 UK retail grocers	Interval data from 7 point rating scales, nominal data from classification and ranking questions	CS item means and t-tests, percentages of classification data
Mentzer, Flint and Hult (2001)	Extended Mentzer, Flint and Kent's (1999) study to test 10 hypotheses of LSQ constructs in a temporal process and satisfaction as process output across 4 customer segments, developed a path model consisting of 9 constructs found by MFK (1999), no indication if same data from larger sample of MFK (1999) study was used, supplier is USA government defense logistics agency, large sample but customer base limited to types of CS needs notwithstanding four different segments	Personal interviews and two-stage mail survey questionnaire	DLA customers in USA (n=2,956, 35% RR)	Interval data from 5 point rating scales, nominal data from classification and ranking questions	CS items and importance means, exploratory and confirmatory factor analysis of CS items to develop constructs

Table 7.3: Logistics Customer Service, Satisfaction and Service Quality Article Details

There were 41 different items or variables of customer service that appeared in the 59 articles reviewed either in discussions or as a result of empirical testing. These items are presented in Table 7.4. Sixteen items have frequencies of 10 or greater in all 59 articles. Frequencies of the 16 items within the 22 selected articles are also presented in Table 7.4, and all have frequencies of 5 or greater in this latter group. These items are listed below, and appear in the order presented in Table 7.4.

1. The provision of customised services for products
2. Competitive price quotes, discounts, payment terms
3. Products and support parts available in stock
4. Easy product ordering
5. Statement of the specific time for a delivery
6. Products arrive undamaged and according to specification (OSD)
7. Complete and accurate orders
8. Consistent order cycle time (OCT) or lead time
9. Appropriate order cycle time (OCT) or lead time
10. On-time delivery on the date promised
11. The provision of ongoing information and status of a delivery
12. Accurate invoices
13. Helpful customer service representatives
14. Immediate action on complaints
15. Prompt and effective handling of returns
16. Proper after-sales technical and other support

These 16 items of customer service might generally be the most important to customers of logistics services due to their frequency in the literature. Whilst these items have been tested or discussed as part of customer service issues in a variety of contexts, they have not been tested in isolation to determine such importance. However, they are an appropriate initial selection of items to include in a battery for this study. The 22 studies were also examined for any constructs underlying these items that were developed as parsimonious models and such constructs are discussed next.

Fourteen studies in the literature developed or utilised constructs of logistics customer service based on five different frameworks. All but two are related to three sets of constructs developed from initial work by La Londe and Zinszer (1976), Sterling and Lambert (1987), and Mentzer, Gomes and Krapfel (1989).

Customer Service Items	Σ59	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Σ22
	Freq																							Freq
Labelling and packaging	2											√						√						1
Willing to customise	10	√	√	√	√	√				√		√	√	√				√	√	√	√			8
Overbooking of service	1										√													1
Pricing including discounts	13		√	√	√	√	√	√	√	√			√	√			√							9
Payment terms	5								√	√		√								√				3
Breadth of product line	2									√	√													1
Availability of new/old products and support parts	16		√	√	√	√	√	√				√	√	√			√	√	√	√	√			9
Telemarketing	3		√									√												3
Co-operative advertising	1											√												1
Supplier integrity	1											√												1
Supplier knowledge	1											√												1
Manufacturer advertising	2											√												1
General "customer service"	5	√	√								√													3
Widespread coverage	1																							0
Selective coverage	1																							0
Lead times	5					√						√						√				√		5
Production scheduling	1											√												1
Inventory control	3											√												3
Order forecast accuracy	1																							0
Ease of ordering	11	√	√			√		√	√	√											√		√	7
Delivery timing	14	√		√		√		√	√	√			√				√	√						9
Special promotion kits	1																							0
Order filled, correct quality, and not mishandled or damaged (OSD)	14					√	√	√	√	√			√	√	√	√	√	√	√	√	√	√	√	14

Table 7.4: Important Customer Service Items (continued...)

Customer Service Items	Σ59 Freq	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Σ22 Freq	
Complete & accurate orders	18	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14
Order cycle time consistency	15	✓	✓	✓				✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	12
Order cycle time length	14	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	12
Deliveries on due date and on time	14			✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14
Frequency of deliveries	3																		✓						1
Communication about deliveries	16	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
Invoice accuracy	12	✓				✓			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	8
Advance shipping notices	5								✓			✓	✓	✓					✓						3
Uses preferred carriers	4			✓								✓							✓						4
Customer service reps	19				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	9
Physical appearances	1																								0
Order expediting	5	✓			✓				✓	✓	✓	✓	✓	✓											5
Efficient and accurate paperwork	2																								0
Action on complaints	15	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	12
Handling of returns	12	✓	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
Product installation	3	✓									✓	✓	✓	✓											3
Product training	4			✓								✓	✓	✓		✓									3
Technical, sales and other support	13	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10

Table 7.4: Important Customer Service Items

Gilmour, Borg, Duffy, Johnston, Limbek and Shaw (1994) and its predecessor incarnations did not investigate constructs but did consider items of customer service in several market segments for scientific equipment. They found differences among the market segments as to which items were required as well as important. For example, firms processing perishable foods would likely consider refrigerated shipping and rapid delivery times as more important customer service features than would a wholesale bookstore. Gilmour et al. were the first group to develop a list of important customer service items that represented the customer's perspective such as order convenience, availability of items, and competent technical representatives. This study is noted here in light of its contribution to customer service items and the number of citations it has received.

The two studies conducted by Maltz and Maltz (1998) and Innis and La Londe (1994) did not specifically focus on customer service, and have also not had any follow-up on their contributions. Maltz and Maltz (1998) examined logistics channel perceptions and responses as functions of customer service performance. Innis and La Londe (1994) investigated the role of satisfaction in customer loyalty and firm market share. The remaining ten studies are considered within one of the three set of constructs.

Pre-transaction, transaction and post-transaction: According to La Londe and Zinszer (1976), customer service has three distinct elements or constructs: pre-transaction, transaction and post-transaction. They discussed customer service variables or items within these constructs that are process-oriented towards the supplier as opposed to being responsive to specific customer requirements. Examples of such variables included preparing "a written customer service policy" or analysing "stockout levels" (1976 p.281).

However, customer requirements and resultant customer satisfaction dimensions may be inferred from the items contained in these constructs. These three constructs also introduce a time factor within a transaction, which is important in a logistics context that will have different and ongoing activities occurring over time on behalf of both

supplier and customer. Besides the supplier selection, a customer's actual purchase behaviour towards logistics services in an organisational setting will differ from a consumer. Thus, customer service items within these three constructs likely play a large role in purchase decisions by actors in such a business-to-business setting.

Morris and Davis (1992) utilised the La Londe and Zinszer constructs in a survey of large industrial firms and delineated the constructs into six factors: pre-transaction consisting of internal operations, transaction consisting of physical appearance, order status, and order accuracy, and post-transaction consisting of start-up and problem handling. The construct of physical appearance implicitly introduced aspects of service quality and SERVQUAL.

Donaldson (1995) also investigated a manufacturing context and developed four factors from his survey analysis. The first two factors, transaction and post-transaction, were derivatives of La Londe and Zinszer's constructs. The third factor was labelled company competence and was based on factors of technical and functional competence developed by Grönroos (1994, 1997) in his work on relationship marketing. The last factor developed by Donaldson was price-related.

The presentation of Donaldson's work is difficult to comprehend as there were four factor columns listed in the table (1995, p.123) accompanying his article but only three columns of factor loadings. This is likely a printing error on behalf of the journal, but little statistical information is available elsewhere in the article to confirm his findings.

Facility management, order processing and information management, inventory management and transportation: Sterling and Lambert (1987, 1989) also used La Londe and Zinszer as a starting point to develop a methodology for testing customer service items in an industrial setting. They used the office systems and furniture industry for their study. Their factor analysis proposed customer service constructs that represented a functional orientation, e.g. lead or cycle time, transportation services and so on. They considered their resultant items transcended the three

constructs proposed by La Londe and Zinszer and did not consider the importance of time and different times in the transaction process.

Lambert and Harrington (1989) replicated the Sterling and Lambert (1987, 1989) study in the plastics industry and found consistency in the use of the original methodology, although they discovered some differences in the importance and ranking of customer service constructs between the two industries.

Lambert and Harrington (1989) introduced 3 additional hypotheses that were negatively worded in order to elicit support from their findings. These hypotheses were extensions of the original hypothesis proposed by Sterling and Lambert (1987, 1989), however Lambert and Harrington incorrectly reported the original hypothesis was supported so there is some confusion over their conceptual framework.

Sterling and Lambert (1987, 1989) recognised that customer service among channel intermediaries requires an integrative approach with the other marketing mix components. Rinehart, Cooper and Wagenheim (1989) further conceptualised this aspect and developed a table of marketing mix items and logistics items according to function such as facility or inventory management. Their contribution came from assigning customer service items to either a marketing or logistics dimension and recognising the purchase transaction and logistics performance of a firm as joint outputs of marketing and logistics activities.

Their marketing constructs were product management, price management, promotion management and place or channel management. The logistics constructs were facility management, order processing and information management, inventory management and transportation. Place or channel management differed from the logistics constructs by being strategic in nature. Overall, the seven studies in the above two sets of constructs were essentially focused on customer service from a supplier's perspective and also did not consider customer satisfaction or service quality.

Availability, timeliness and quality: Mentzer, Gomes and Krapfel (1989) developed

the model in Figure 4.6, and reproduced as Figure 7.1, that compared customer satisfaction dimensions of customers to customer service dimensions of suppliers. They also argued that logistics activities only form a subset of a firm's entire customer service process as a firm's other marketing activities should form the rest of the customer service process dimensions.

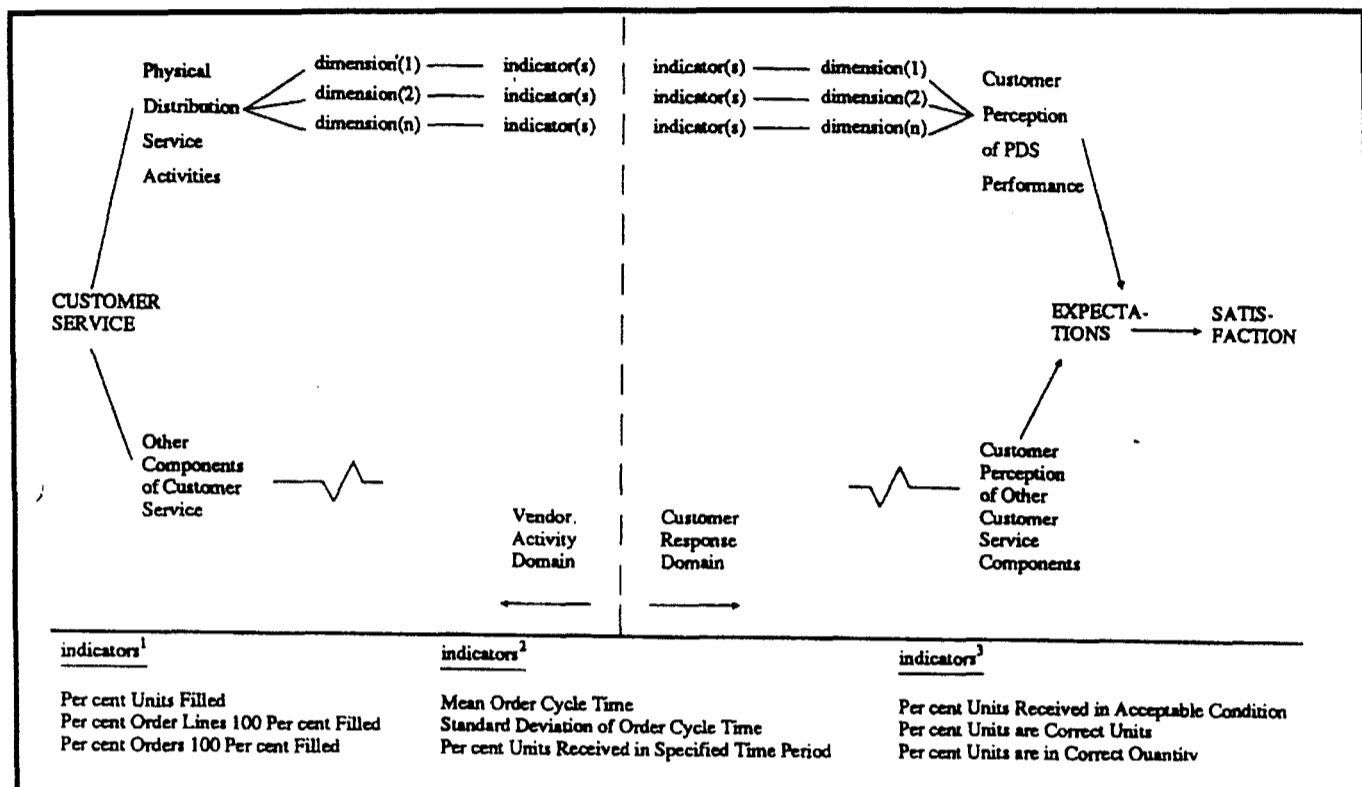


Figure 7.1: Conceptual Logistics Customer Service and Satisfaction Model

(Source: Mentzer, Gomes and Krapfel 1989 p.59)

Mentzer, Gomes and Krapfel noted customer satisfaction is the outcome of a comparison between a customer's perceptions of customer service and a priori expectations of the total customer service performance. They explicitly introduced the service quality and SERVQUAL theory of PZB (1985, 1988) to the logistics discipline. Based on their own literature investigation, Mentzer, Gomes and Krapfel suggested that “the major dimensions of physical distribution service are availability, timeliness and quality” that can be represented by indicators such as “in-stock rate and percent orders, consistent delivery, average delivery time, and order-filling accuracy” (1989 p.59).

Emerson and Grimm (1996) tested the Mentzer, Gomes and Krapfel model in a survey of a power tool manufacturer's retail customers. They found seven dimensions or constructs across logistics and marketing activities using factor

analysis. Their three logistics constructs were availability, delivery quality and communication as opposed to timeliness. Their four marketing constructs were pricing policy, product support sales representative and customer service representatives and quality. Whilst their study appears sound there are some analytical inconsistencies, for example they reported coefficient alpha reliability for a two-item factor rather than using the inter-item correlation as recommended by Carmines and Zeller (1979) and Nunnally and Bernstein (1994).

Bienstock, Mentzer and Bird (1997) developed scales of physical distribution quality using Mentzer, Gomes and Krapfel's constructs of timeliness, availability and the condition of products as opposed to quality. They considered timeliness was the most important and concluded that technical or outcome criteria were the most important determinants of service quality perceptions. Functional or process criteria were not found to be as important but were not discounted. These two criteria are also those proposed by Grönroos (1994b, 1997)

Mentzer, Flint and Kent (1999) developed a customer-focussed quality scale for logistics that featured nine constructs: information quality, ordering procedures, ordering release quantities, timeliness, order accuracy, order quality, order condition, order discrepancy handling, and personnel contact quality. This delineation of constructs appears derived from the original three constructs of Mentzer, Gomes and Krapfel if ordering or orders are substituted for availability.

Mentzer, Flint and Hult (2001) extended the Mentzer, Flint and Kent (1999) study in considering logistics service quality as a process across order placement, order receipt and satisfaction. They used the same nine constructs and the same sample source but did not indicate whether the data used in both studies was the same. They did find support for process considerations in logistics service and supported the Gilmour et al. (1994) findings regarding segmentation.

Mentzer, Flint and Hult noted they "could not find any articles in the logistics literature that offered a process conceptualization that included all the dimensions"

tested in their study (2001 p.86). They did not however consider or discuss the multitude of customer service items and similar process dimensions of pre-transaction, transaction and post-transaction posited by La Londe and Zinszer. They only noted La Londe and Zinszer's three-part definition of customer service and began their discussion of constructs with Mentzer, Gomes and Krapfel (1989).

There are two other criticisms of these latter two studies notwithstanding their contribution to scale development, and rigorous methodological and quantitative analysis. Firstly, the constructs are substantially ordering functions and their focus may be more on purchasing criteria rather than all customer service items that are important in logistics. Secondly, the industrial sectors surveyed are customers of a non-profit government agency, the Defense Logistics Agency in the U.S. that may have very different views of customer service requirements than profit-driven firms.

The 16 predominant items of customer service found in the literature are listed in Table 7.5 together with their categorisation against each of the three possible sets of constructs discussed above. These items will be considered against the three sets of constructs extant in the literature when utilised in this study as noted previously.

There has been considerable discussion of customer service issues in the literature however there has been little empirical work done. Twenty-two articles over 25 years is not a significant output, which reinforces the call for further customer service research commented upon in Chapter Three. Over one-third of the empirical research has focussed on the supplier's perspective and thus may not represent considerations that would be undertaken within a market orientation.

There has been little work done on customer satisfaction in logistics, particularly studies independent of customer service and notwithstanding a call for integrated study. Some of the empirical work presented lacks quality as regards theoretical development or analytical rigour, which is seen as a pressing requirement for logistics research (Mentzer and Kahn 1995, Mentzer and Flint 1997) and discussed

further in Chapter Eight. Finally, all but three of these studies are U.S.-based. Two studies were conducted in the UK whilst one was conducted in Australia.

Customer Service Items	La Londe and Zinszer (1976) to Donaldson (1995)	Sterling and Lambert (1987) to Rinehart, Cooper and Wagenheim (1989)	Mentzer, Gomes and Krapfel (1989) to Mentzer, Flint and Hult (2001)
Competitive price quotes, discounts, payment terms	Pre-Transaction	Price Management	N/A
Products and support parts available in stock	Pre-Transaction	Inventory Management	N/A
On-time delivery on the date promised	Transaction	N/A	Timeliness
Easy product ordering	Pre-Transaction	Order Processing and Information Management	Ordering Procedures
Statement of the specific time for a delivery	Transaction	N/A	Timeliness
Complete and accurate orders	Transaction	Order Processing and Information Management	Order Accuracy
The provision of customised services for products	Pre-Transaction	N/A	N/A
Appropriate order cycle time (lead time)	Transaction	Order Processing and Information Management	Timeliness
Consistent order cycle time (lead time)	Transaction	Order Processing and Information Management	N/A
The provision of ongoing information and status of a delivery	Transaction	Order Processing and Information Management	N/A
Accurate invoices	Transaction	N/A	N/A
Helpful customer service representatives	Transaction	Promotion Management	Personnel Contact Quality
Products arrive undamaged and according to specification	Transaction	N/A	Order Condition
Immediate action on complaints	Post-Transaction	Product Management, Transportation Management	Order Discrepancy Handling
Prompt and effective handling of returns	Post-Transaction	Product Management, Transportation Management	Order Discrepancy Handling
Proper after-sales technical and other support	Post-Transaction	Promotion Management	Personnel Contact Quality

Table 7.5: Customer Service Items and Possible Constructs

Sixteen items have been proposed as important for logistics customer service. They also are primarily transaction-based. Only three of them may have relevance beyond

an actual transaction: the ability of suppliers to customise, helpful customer service representatives, and after-sales service and support.

Twelve empirical studies follow one of three lines of construct development. The three sets of constructs discussed also appear to have focus on transactions within the logistics process such as ordering and timeliness. There is a disparity in the literature regarding any relationships among the different studies and construct sets and thus the external validity of the constructs in each set are unknown.

The analytical techniques have improved rigour somewhat as they have moved from simple means and standard deviations of ordinal data to confirmatory factor analysis of interval data. However much remains to be done in the pursuit of logistics customer service and satisfaction, particularly as regards the latter.

7.3 CONCLUSIONS

This chapter has examined the relevant literature concerning customer service, customer satisfaction, service quality and their impact on the firm's profitability and customer relationships in a logistics context. This section summarises the key points and findings, and discusses the resulting disparities in the literature that provide a point of departure for the research issues in this study.

7.3.1 Customer Service

Customer service in logistics has been found to be necessary and is impacted by various environmental factors shaping today's marketplace. Techniques and methodologies in the marketing discipline can assist customer service research in the logistics discipline. The definition of customer service, adopted for this study in Chapter Three, is as follows:

customer service in logistics is a *process* for *providing* significant value-added *benefits* for *customers*, over and above basic product and service benefits, within the channel of distribution (or supply chain) in a cost-effective way.

7.3.3 Service Quality

The premise that customer satisfaction is also an outcome of service quality provides a point of departure for understanding customer service and satisfaction in logistics. The SERVQUAL service quality instrument provides a useful tool notwithstanding issues and reservations surrounding its robustness and validity. Some empirical studies in logistics have deviated from original SERVQUAL concepts and attempt to understand what logistics customers may want and what their behavioural intentions may be to certain customer service and LSQ initiatives.

Key decision criteria for firms include levels of customer service provided to customers and the cost trade-offs associated with them. The outcome of customer satisfaction as a function of customer service is considered a quality measure in services literature and the SERVQUAL model was proposed as one mechanism for examining that measure.

7.3.4 Importance to the Firm

Firms need to generate profits to carry on their business and that entails meeting the needs of all their stakeholders, including customers. Empirical studies have provided frameworks and evidence that illustrate parts of a link from customer service→customer satisfaction→loyalty→better firm performance and profitability.

Customers who enjoy continual customer satisfaction with a firm tend to become loyal and repeat customers. This generates additional revenues and profits for the firm. Customer satisfaction is therefore linked to logistics through customer service and the outcome of firm profitability in the logistics process. Over time customers should become more profitable and loyal, which are the hallmarks of an ongoing relationship.

7.3.5 Relationships

The marketing and logistics literature on relationships or partnerships outlines potential benefits available to customers or buyers and suppliers or sellers entering

into such arrangements. These include the important benefit of providing increased long-term profits that is fundamental to a firm's long-run success and health. It also calls for establishing relationships or partnerships with suppliers in order to build trust and loyalty, develop effective long-term strategies, and be pro-active to customers' needs.

However, some empirical evidence suggests that items important to logistics customers may be transactional in nature. Some of the literature also suggests there may be other factors at work that could affect the requirement to establish relationships and also indicates that cost reduction may be a key variable for customers.

Other empirical evidence reported that customers or buyers do not appear willing to embrace relationships as readily as suppliers or sellers and appear to revert to purchase behaviours related to their key transactional concerns over costs and price. Such behaviour is not easily explained within existing theoretical concepts of relationships or relationship marketing.

7.3.6 Existing Empirical Research

A literature review provided 41 different items or variables of customer service from the 59 references examined. Sixteen variables appeared very frequently either within general discussions or as a result of significant hypothesis testing and might be dominant among customers of logistics services. Further, they have not been tested independently or in isolation from other customer service variables.

Twelve studies were found to have contributed to the development of scales and constructs of customer service in logistics. However there are disparities in the literature regarding the cost trade-off decision criteria for firms in a logistics context and regarding the importance of alternative constructs of measures in a customer service and customer satisfaction context. Measures of customer service and customer satisfaction in logistics may also have other underlying constructs different from the SERVQUAL constructs.

Prior research also indicates firms may not understand the concepts of logistics, customer service and customer satisfaction as they apply to customers and their needs. However firms need to understand these concepts to have a chance of meeting customer needs and enhancing their own profitability.

There is also a disparity in the literature regarding the operationalisation of the concepts for firms and practitioners. Many references have examined issues of customer service, but customer satisfaction has not been examined much at all in the industrial and logistics discipline.

The sixteen items or variables of customer service appeared dominant in the literature, however there is a disparity regarding their relevance and importance to customers. They have not been examined in isolation from other variables nor examined independently to determine if there are any relationships with the 12 studies that developed the three sets of constructs.

Lastly, three sets of constructs in the various studies and the 16 dominant items are primarily transaction-based and do not appear to relate to literature concerning business-to-business relationships. Thus there is significant disparity in the literature regarding components of customer service and customer satisfaction in logistics related to current relationship theory and practice.

Extant literature is lacking regarding food chains and food processing. As noted in Chapter One, Ennew and McDonald (1995) argued the food industry is relatively under-researched” and “food processing and food retailing have received rather less attention” than primary agricultural research (1995 p.41). Literature in food chain logistics has primarily followed modelling or optimisation orientation. The few studies that have considered customer service and satisfaction, or service quality, (Flanagan 1992, Stank, Daugherty and Ellinger 1998, Collins, Henschion and O’Reilly 2001) have either not been extensive as regards methodology and methods, generalisable to a large group, or academically rigorous. Cunningham (2001)

provided a review of literature related to supply or value chains in the ‘agrifood’ industry, which includes all linkages from primary producer to consumer, and concluded that “given the paucity of peer reviewed literature there is clearly scope for more research in all agrifood value chains” (2001 p.215).

7.4 RESEARCH QUESTIONS FOR THIS STUDY

The various considerations developed in this chapter are shown as a conceptual model of customer service and customer satisfaction in logistics in Figure 7.2. This model is adapted from the Mentzer, Gomes and Krapfel (1989) model of marketing and logistics customer service and satisfaction in Figure 7.1, and service quality work of PZB (1985, 1988) examining expectations and perceptions of customers.

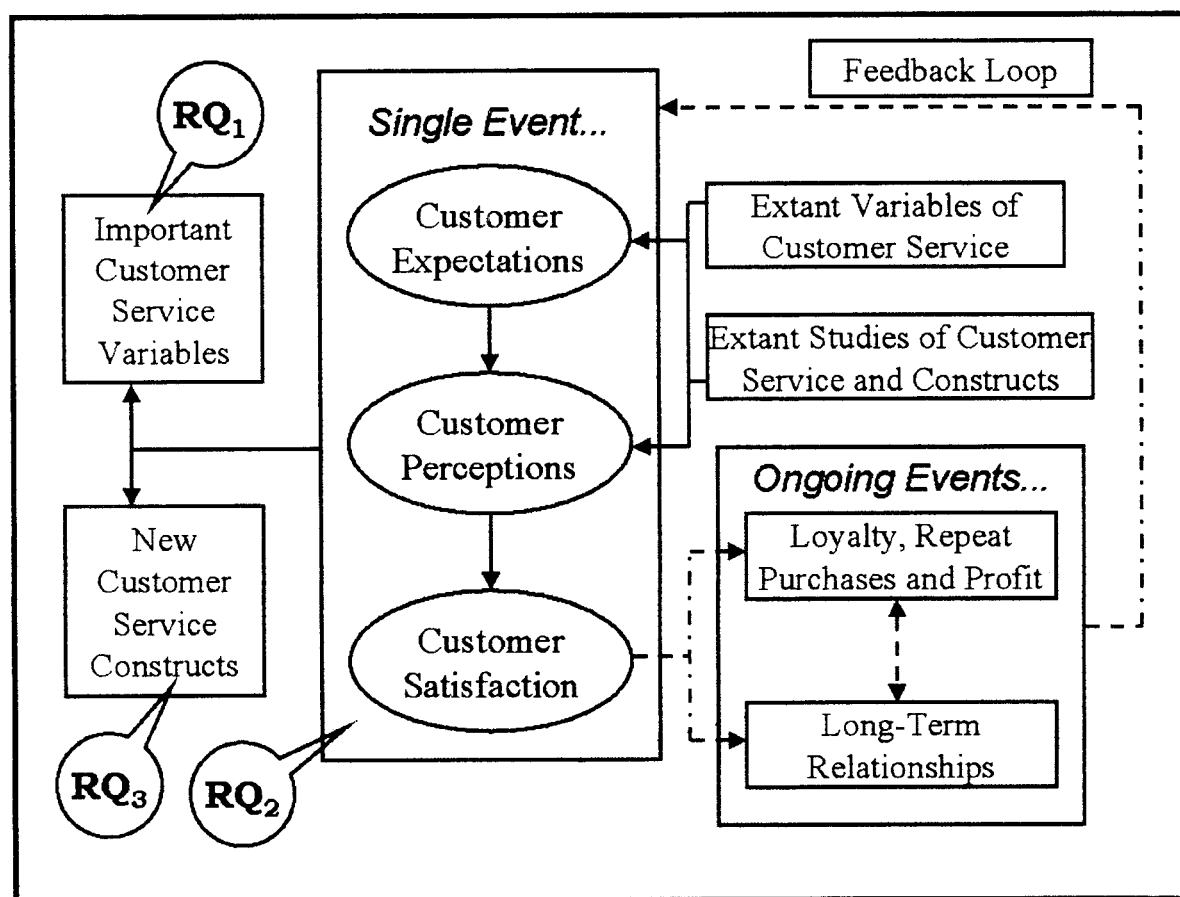


Figure 7.2: Conceptual Model to Study Customer Service and Customer Satisfaction in Logistics

This will be the operative model for this study to conduct research regarding the findings and disparities discussed above. The 16 ‘dominant’ items or variables and three sets of construct discussed will be investigated as potential influences of customer service, and for their possible dominance regarding other variables.

Managers might need to consider their customer service strategies in light of any dominant items in order to effectively and efficiently utilise their limited marketing mix resources.

It is posited that customer service influences a customer's expectations and perceptions that in turn affects customer satisfaction either positively or negatively. This will be examined for one event in a cross-sectional study. Customer satisfaction is also presented as a potential influence of long-term relationships between a supplier and its customer, and whether the customer will become loyal to the extent of providing additional revenues and profits for the supplier.

This study will consider a dyadic exchange between a customer and its supplier as regards determining and understanding customer needs and establishing customer service features to fulfil such needs. The study will be conducted from the customer's perspective. Such an approach is required as each industrial sector has its own unique needs and issues that complicate generic customer service and satisfaction considerations.

Three research questions (RQ) for this study are proposed and are shown in Figure 7.2 where they interact with the model:

RQ₁: *Which of the 16 customer service items found in the literature do firms expect suppliers to provide, how important are these 16 variables, and are there any other variables that are important?*

RQ₂: *Did firms achieve satisfaction from a single service delivery event as a result of a supplier providing these 16 customer service items? If they did not achieve satisfaction were there any key discriminating items?*

RQ₃: *Do any of these 16 variables underlie constructs of logistics customer service for the selected industry sector that are*

different or similar to the three sets of constructs found in the literature?

The research of these preliminary research questions will help close the current disparities in our knowledge of customer service, customer satisfaction, service quality, and their relationships to business logistics. It will also provide a linkage between existing theory and research between the marketing and logistics disciplines and generate information for further research in the main part of this study. The full research methodology for the entire study is described in Chapter Eight.

Part Two - The Research

CHAPTER EIGHT

RESEARCH METHODOLOGY

8.1 INTRODUCTION

Chapters Three through Seven discussed the background literature that shaped the research objectives proposed in Chapter Seven. Gummesson has presented knowledge, based on Vedic philosophy, as a “blend of three interacting elements: the process of knowing (methodology), the knower (the researcher) and the known (the result)” (2002 p.325). This chapter provides the ‘process of knowing’ or the research methodology under which this thesis was conducted.

First, the research objectives are reiterated. Research theories and paradigms in logistics and marketing, and the debate between research rigour and relevance are then discussed. The research design for the thesis is presented next and considers design issues similar and unique to the pilot and main study portions of the overall thesis. However, it should be noted that some issues unique to the pilot and main studies are discussed further in their respective chapters. Finally, the chapter is summarised and concluded as a prelude to presentation of the pilot and main studies in Chapters Nine and Ten respectively.

8.2 RESEARCH OBJECTIVES REDUX

As discussed in Chapter Seven, this thesis is underpinned by the conceptual model of customer service and customer satisfaction in logistics shown in Figure 7.2 and reproduced here as Figure 8.1. This model is adapted from the Mentzer, Gomes and

Krapfel (1989) model of marketing and logistics customer service and satisfaction, and contains elements from the service quality work of PZB (1985, 1988). The model in Figure 8.1 is the operative model for this thesis to conduct research regarding findings and disparities discussed in the literature. The 16 items or variables of customer service found in the literature will be investigated for importance and as potential influences on the three dimensions of customer expectations, perceptions and satisfaction.

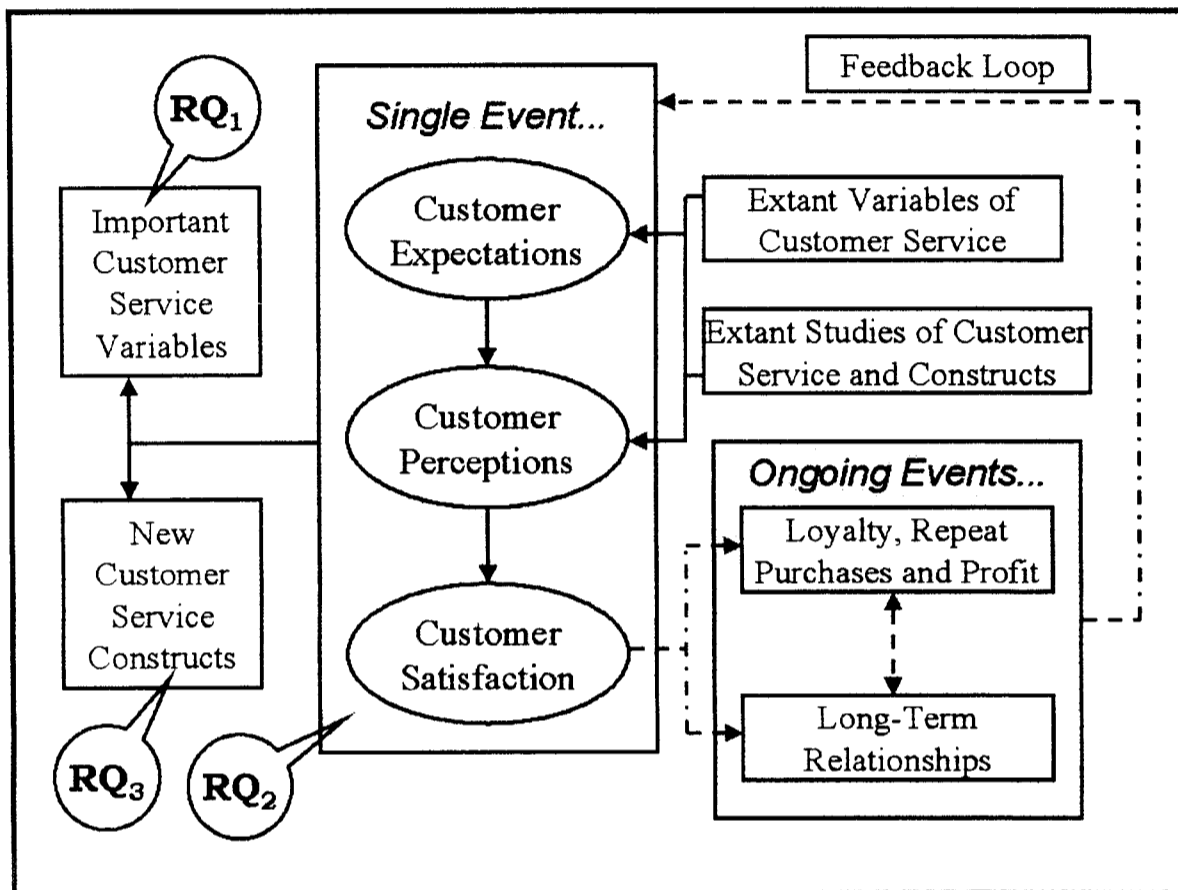


Figure 8.1: Conceptual Model to Study Customer Service and Customer Satisfaction in Logistics

Customer service is hypothesised as a potential influence on a customer's expectations and perceptions that in turn affects customer satisfaction, either positively or negatively. Customer satisfaction is also hypothesised as a potential influence on long-term relationships between a supplier and its customer and whether a customer will become loyal to the extent of providing additional revenue and profits for the supplier. These dimensional relationships will be examined in a cross-sectional study of one event across one industrial sector. This study will consider a dyadic exchange between a customer and one of its suppliers to determine and understand the customer's logistics services needs and will be conducted from the customer's perspective. This approach is utilised as each industrial sector has its own

unique needs and issues that complicate generic customer service and satisfaction considerations.

The three research questions (RQ) proposed for this study in Chapter Seven are repeated below and are shown in Figure 8.1 where they interact with the model:

RQ₁: *Which of the 16 customer service items found in the literature do customers expect suppliers to provide, how important are these 16 variables, and are there any other variables that are important?*

RQ₂: *Did customers achieve satisfaction from a single service delivery event as a result of a supplier providing these 16 customer service items? If they did not achieve satisfaction were there any key discriminating items?*

RQ₃: *Do any of these 16 variables underlie constructs of logistics customer service for the selected industry sector that are different or similar to the three sets of constructs found in the literature?*

The next section considers theoretical and paradigmatic issues surrounding research in general and the logistics and marketing disciplines in particular to set the epistemological framework for this thesis.

8.3 RESEARCH PHILOSOPHY AND STRATEGY

8.3.1 Research Theories in Logistics

As discussed in Chapter Two, research in logistics (and SCM) as an independent discipline has only been undertaken since the 1960s. Thus, “compared to older and more established disciplines... logistics does not have as rich a heritage of theory development and empirical research” (Stock 1997 p.515). However, logistics and SCM are “far too important to be considered either a temporary fad or parochial arena for a guild of specialist researchers” and research in these areas “is suited to

explanatory approaches which adopt multidisciplinary methodological pluralism” (New 1997 p.15).

Mentzer and Kahn (1995) argued that logistics research has also lacked a rigorous orientation and suggested a framework for future logistics research that follows the scientific method and a quantitative paradigm to assist researchers in developing rigorous research. Mentzer and Kahn’s framework is not unique as it follows a basic format of idea generation, literature review, hypothesis formulation, data collection and analysis that has been proposed by many others for conducting quantitative and empirical research (Blaxter, Hughes and Tight 1996, Churchill 1987, Malhotra and Birks 2000, Remenyi, Williams, Money and Swartz 1998, Robson 1993). It is useful though as it is presented within a logistics context.

Chow, Heaver and Henriksson defined logistics research “as the systematic and objective search for, and analysis of, information relevant to the identification and solution of any problem in the field of logistics” (1994 p.17). They reviewed the logistics literature and argued performance has included both ‘hard’ and ‘soft’ measures that are difficult to select and analyse. In addressing this issue, Caplice and Sheffi (1994, 1995) reviewed logistics metrics and performance measurement systems and presented a framework to evaluate systems at the individual metric level and system-wide levels. Their resulting evaluation criteria were used in the determination and wording of the measures and variables investigated in this thesis.

However the context of logistics and SCM research is beset with issues regarding its epistemology and resultant theoretical underpinnings, as well as its managerial or practical relevance. New and Payne argued “logistics is one of the sub-fields of management which like to wallow in its own obscurity” and follows existing trends by “evolving into integrated logistics or strategic supply chain management, or any other label which can be generated by combining managerial buzzwords” (1995 p.60).

This argument may be a reflection on the practitioner orientation of some logistics research and publications and is not without merit. Figure 8.2 shows a consulting firm's model that contains the type of jargon and 'buzzwords' New and Payne criticised, e.g. "take control of the Supply Chain decision process - be the Kingmaker" and "out-source non-core capabilities but maintain visibility of the internal and external supply chain" (Pearson and James 2002 p.16).

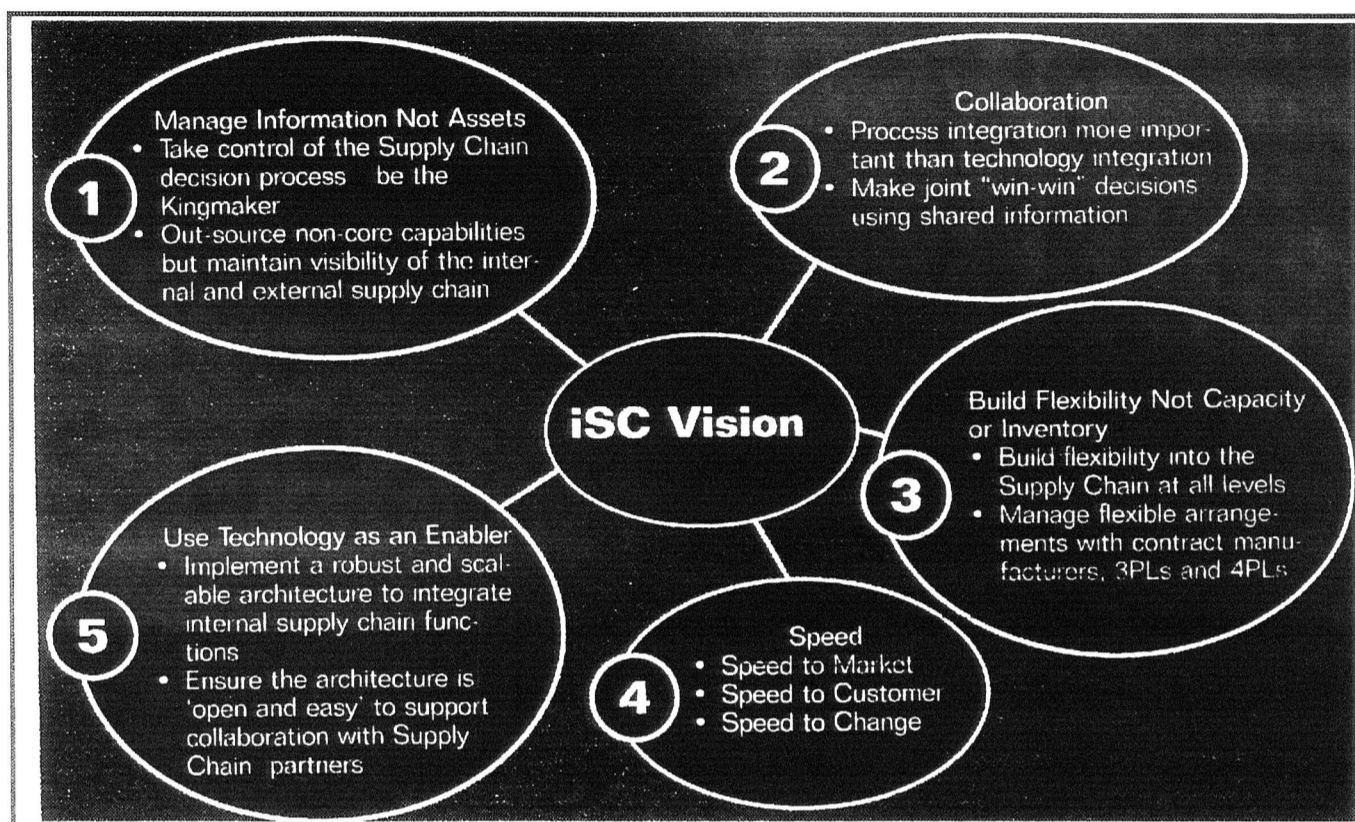


Figure 8.2: Five Principles of Intelligent Supply Chains

(Source: Pearson and James 2002 p.16)

Research in logistics is also difficult as the scope of the domain keeps changing such that "it becomes less clear what differentiates the subject as a distinctive field and what constitutes valid research questions and investigative strategies" (New and Payne 1995 p.61). This epistemological concern reflects the ongoing debate discussed in Chapter Two about logistics being part of other disciplines, such as operations management or marketing. Notwithstanding, New and Payne also supported other views (Kent and Flint 1997, Stock 1997) that logistics researchers utilise theories and models from other disciplines in order to help define and differentiate the logistics discipline.

These issues do not affect logistics alone. The marketing discipline is also beset with issues regarding epistemology and theory, and rigour versus relevance, as is most of

management study (Wensley 2002). Hunt (1994) and Piercy (2002) have argued that marketing is in danger of losing the value of its research paradigm and validity of its publishing record by failing to make an impact with any audience of research in marketing, i.e. students, corporate managers and other disciplines.

Hunt rhetorically asked “why has marketing made so few original contributions to the ‘strategy dialogue’ over the last decade?” (1994 p.13) whilst Piercy queried “how many of the important new ideas in ‘marketing’ that exercise the senior management mind came out of academic research in marketing, and how many came out of consultancies and corporate innovation?” (2002 p.354). Confusion in marketing and logistics curricula resulting from such failure is shown in Table 8.1.

Whilst Piercy’s self-styled “polemical commentary” (2002 p.350) appears “far-fetched and alarmist” (2002 p.354) and might be considered “somehow old-fashioned and harking back to a past which has been lost for ever” (2002 p.362), he has highlighted the integrative nature of many management disciplines including marketing and logistics. The real danger for academics and researchers is in not recognising and adapting to such integration.

<i>We currently believe this should be taught as part of marketing...</i>	<i>Corporate practice, competition from other disciplines, and the weight of research produced and published by those disciplines, suggest this topic will be taught as...</i>	<i>In which case the teachers will not be marketing academics, they are more likely to be academics in...</i>
Distribution and logistics	Supply chain management	IT e-business Operations

Table 8.1: Potential Effect of Failure on the Legitimacy of the Conventional Marketing Curriculum

(Source: Piercy 2002 p.355)

It is a proposition of this thesis that the disciplines of logistics and marketing should be integrated, thus these issues will hereafter be discussed as pertaining jointly to logistics and marketing.

8.3.2 The Positivist Paradigm

Gummesson contended the “value of good theory is underrated both by academics and practising managers. The demand that research in marketing be immediately applicable to please industry is sometimes practical advice, sometimes impractical” (2002 p.325). He concluded that much of marketing research remains descriptive, “with traces of analysis and conceptualisation but still closer to the substantive data than to a general theory” (2002 p.326).

Mentzer and Kahn (1995) posited that logistics research was founded in the positivist paradigm and that future research should follow the scientific method inherent in it that seeks to provide explanation or causality regarding phenomena. Anderson (1983) provided flowcharts, shown in Figure 8.3, of the logical empiricist and falsificationist doctrines of Kuhn (1996) and Popper (1999) respectively, that forms the basis of the positivist paradigm.

Anderson noted that Laudan, following Kuhn and Popper, argued that “the objective of science is to solve problems – that is, to provide acceptable answers to interesting questions” (1983 p.23). Thus, Anderson considered the debate between Kuhn and Popper regarding the truth or falsity of a theory, as shown in the two flowcharts in Figure 8.3, is “irrelevant as an appraisal criterion... the key question is whether the theory offers an explanation for important empirical problems” (ibid.).

However, Anderson also noted shortcomings in utilising a purely positivist approach and concluded that the marketing discipline “must look to the recognized social and natural sciences for guidance” (1983 p.27) if it wishes to achieve scientific status. He called for a “greater commitment to theory-driven programmatic research, aimed at solving cognitively and socially significant problems” (1983 p.28) and considered channel behaviour studies were already moving in that direction.

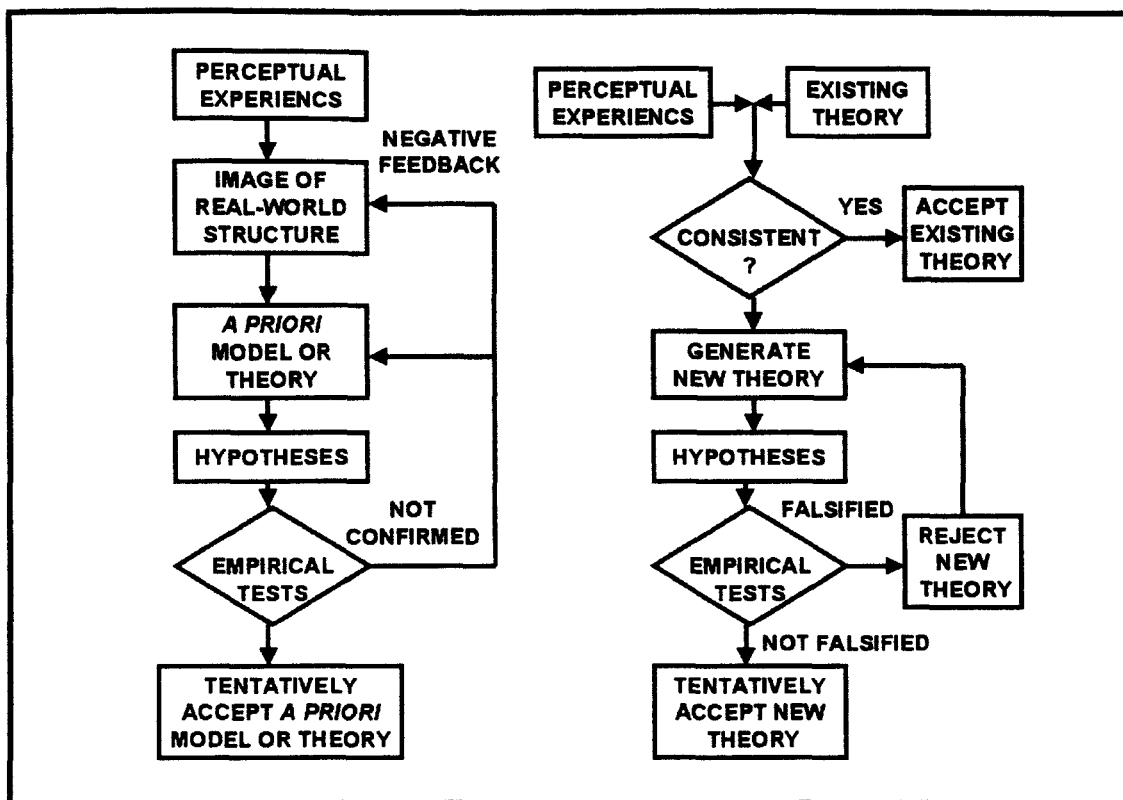


Figure 8.3: Logical Empiricist versus Falsificationist Models of Scientific Method

(Source: Anderson 1983 pp.20-21)

Hunt, a leading philosophical thinker in marketing, agreed with Anderson about the expansion of positivist research in the marketing discipline. Drawing on work by Kotler, Hunt (1991) delineated a three dichotomies model to classify research into marketing phenomena under categories of profit versus nonprofit, positive or what exists versus normative or what ought to be, and micro or firm versus macro or the aggregate market.

Hunt's work was an extension of earlier discussions wherein he proposed "that the basic subject matter of marketing is the exchange relationship or transaction" (1983 p.12). Given that his proposal implied marketing science is a "behavioral science that seeks to explain exchange relationships" (1983 p.13), Hunt provided four interrelated sets of fundamental explananda, or 'things to be explained', that are shown in Figure 8.4. Hunt further proposed that a general theory of marketing "would explain phenomena of all four sets" and would probably be comprised "of an integrated collection of subtheories, rather than a hierarchical theory" (1983 p.16).

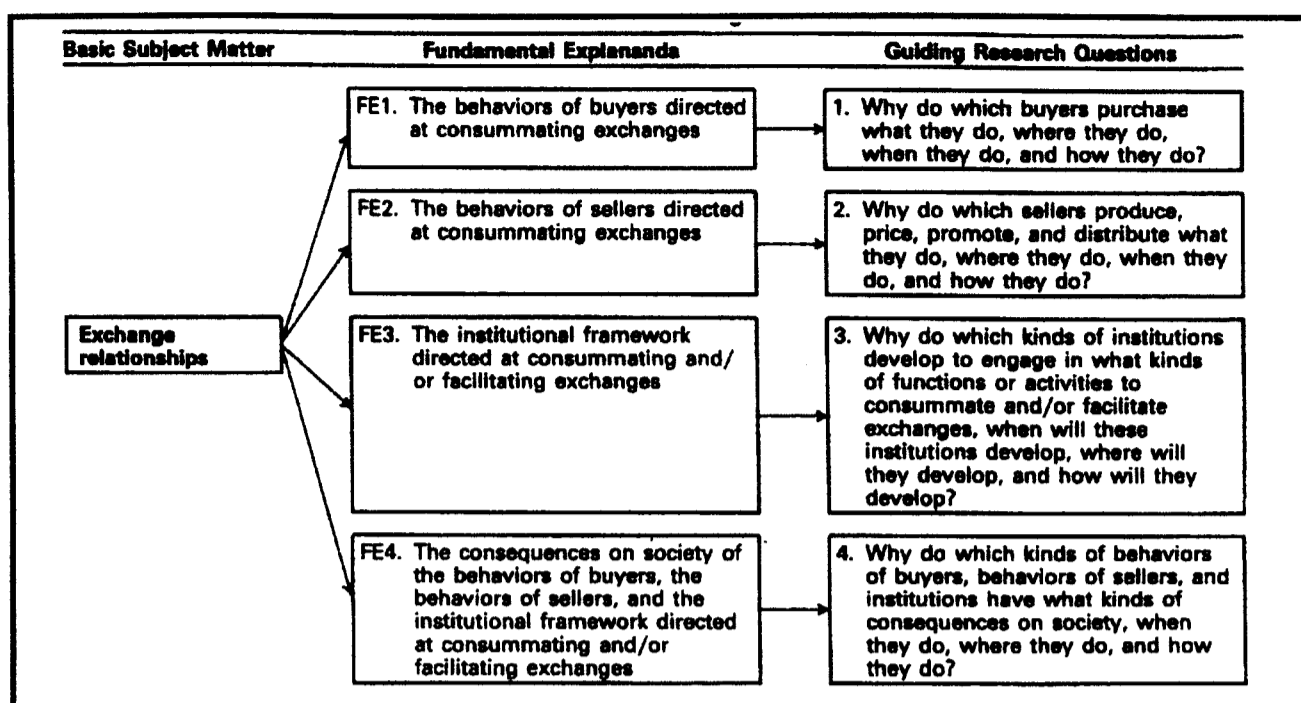


Figure 8.4: The Fundamental Explananda of Marketing

(Source: Hunt 1983 p.13)

Peter and Olson argued that within the positivist or empiricist perspective of science “certain factors are excluded from consideration, including the effects of (a) social interaction and influence among scientists, (b) the idiosyncratic beliefs and values of individual scientists, and (c) scientists’ subjective interpretations of observational data” (1983 p.119). They considered these factors are critically important in knowledge development in a relativist and constructionist view of science, which if undertaken in research would allow “marketers the freedom and confidence to create new conceptual schemes and perspectives” (1983 p.124). This argument is consistent with both Anderson and Hunt.

Hunt’s Fundamental Explananda number 4, the consequences on society of the behaviours of buyers and sellers and the framework in which they conduct exchanges, is also seen by Bartels (1983) as an important part of marketing. However, as noted in Chapter Two, Bartels argued the “exclusion of physical distribution from marketing has been another contraction of the disciplinary field” notwithstanding it has become “the interest of those called physical distributionists, material managers, and logisticians” (1983 p.34).

The primary research issues of this thesis are concerned with aspects of Hunt’s Fundamental Explananda 4 (1983) as they relate to customer service, satisfaction and

relationships in dyadic exchange situations within a channel of distribution or supply chain. The research issues are contained within the profit, micro and positive category of Hunt's three dichotomies model (1991).

8.3.3 A Quantitative Approach

The positivist paradigm usually denotes a quantitative research approach (Mentzer and Kahn 1995). Whilst some authors have argued logistics and marketing research should consider more non-positive and qualitative research (Deshpande 1983, Näslund 2002, Chung and Alagaratnam 2001), Mentzer and Kahn's framework is appropriate if descriptive or causal research is undertaken. This thesis is descriptive and explanatory regarding variables and constructs of customer service and satisfaction. It is also concerned with investigating these items across a sample of one industrial sector. Thus, the primarily quantitative approach undertaken in this thesis is appropriate and consistent with the nature of positivist enquiry.

8.3.4 Rigour versus Relevance

New and Payne (1995) presented two issues that might affect the proper implementation of a positivist methodology and quantitative approach. The first issue is the notion that research is socially constructed, which leads to the dichotomy where "it is possible to have academic research which scores high on 'rigour' and 'cleverness' but low on connection to 'real' problems" (1995 p.61). This dichotomy between an 'abstract' approach to academic rigour and relevance to 'real issues' is illustrated in Figure 8.5.

The incremental, technical progress approach corresponds to the logical empiricist doctrine of Kuhn (1996) and falsificationist doctrine of Popper (1999). In contrast, the managerial impact approach consists of broader 'soft' problem solving techniques for business practitioners that are usually prescriptive or normative and jargon-laden. New and Payne contended that the "broader the question and the issues involved (e.g. the emergence of 'value-adding partnerships'), the more difficult rigorous research becomes" (1995 p.62).

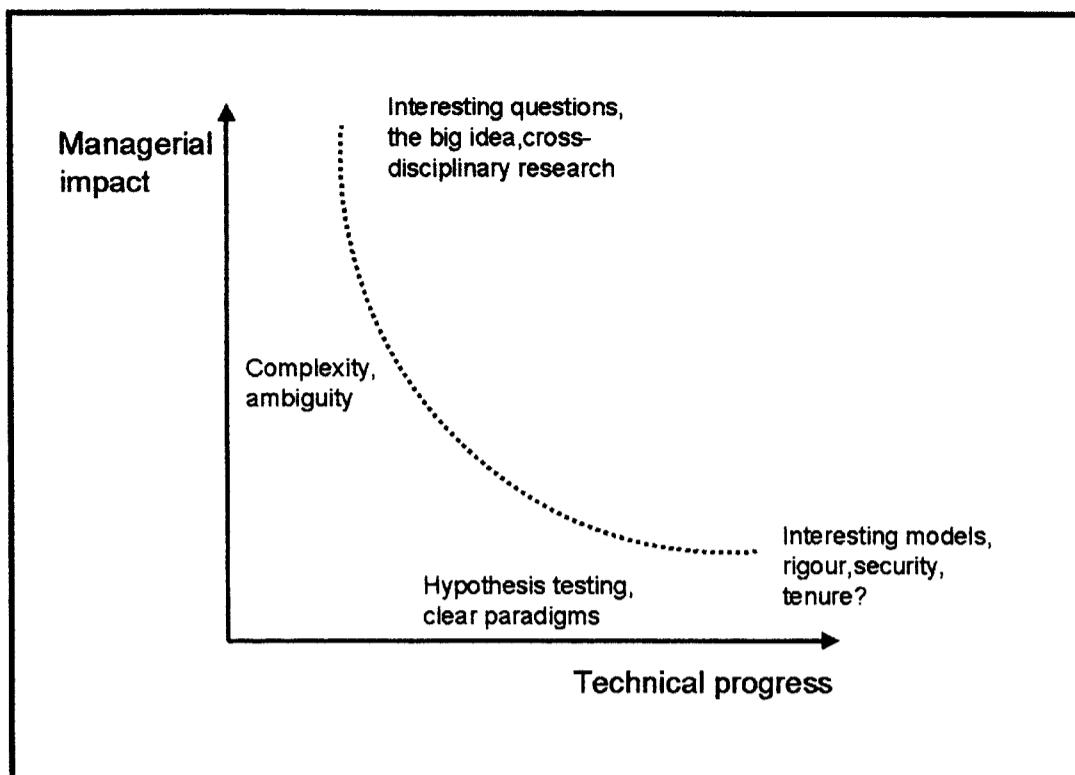


Figure 8.5: Academic Research – Abstract versus Real Issues
 (Source: New and Payne 1995 p.62)

Such different research approaches have also developed differently across research cultures. Voss (1995) noted the technical progress approach is characteristic of US-based research in operations management whilst the managerial impact approach is characteristic of case study oriented research in the UK. This is not to say that logistics research in the UK is not as rigorous as the US, rather it illustrates a different approach regarding managerial relevance.

New and Payne's second issue is "formulation of presumed causal links" which are important "because they determine the underlying justification of research questions" (1995 p.64). They provided an example of three possible frameworks with different a priori assumptions regarding three dimensions of logistics: practice, performance and environment. The three frameworks and their respective paradigms are shown in Figure 8.6. New and Payne delineated these three frameworks to demonstrate that the process of empirical research in logistics is not straightforward. These frameworks "will each justify different types of research questions, and result in different types of knowledge" (1995 p.67).

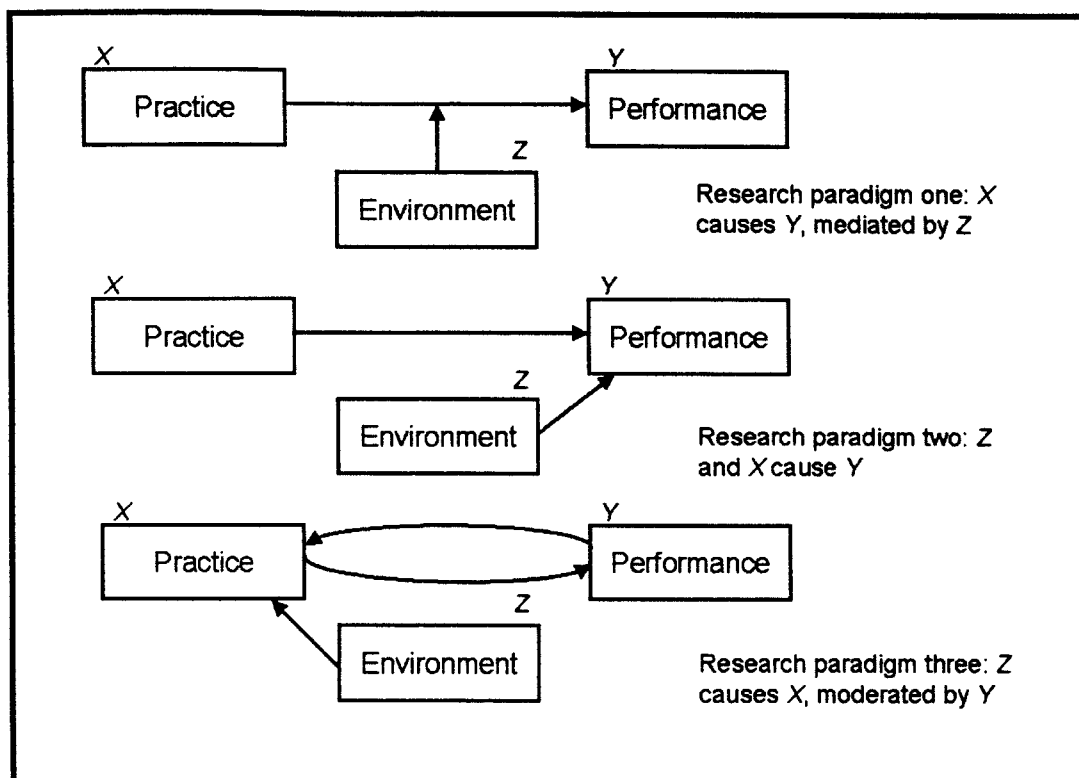


Figure 8.6: Three Frameworks for Empirical Logistics Research
 (Source: New and Payne 1995 p.64)

The foregoing issues and concerns are acute in logistics research because logistics has to “address the issue of operational systems which span organizational boundaries” and “present a set of commercial and managerial issues which goes beyond the technical issues of material and information flow” (New and Payne 1995 p.67). Logistics researchers are therefore challenged to properly design and apply units of analysis in complex logistics contexts and to properly delimit a study’s boundaries. Moreover, logistics research designs need to consider social and human involvement in logistics activities, and not just consider mechanistic modelling and simulation. This thesis has considered social and human involvement in terms of the measures used for customer service and satisfaction and the industry context, which is discussed further in section 8.4.

Brownlie and Saren argued that “embedded in the culture of ‘relevance’ is the understanding that theory and practice are somehow different... and that there is a ‘real’ gap between them ‘out there’ that must be closed, or at least bridged... ‘Relevance’ is then a quality that is attributed to research that is perceived to bring the worlds of marketing theory and practice together” (1997 p.147). They further argued that is “possible to understand the tensions within the discourse and to influence their character, but not to resolve them” (1997 p.148). Thus, academics

need to look inside themselves and reflect within such discourse, the “problem of understanding marketing practice lies less with marketing practitioners than with the marketing academy and its understanding of itself as it is manifest in its communicative practices” (1997 p.160).

Piercy contributed a useful line of reasoning for the rigour versus relevance debate, truncating it to two simple points:

- (1) “If your research is not rigorous, then by definition it cannot be relevant because no-one can rely on your results.
- (2) If your research is not relevant, then by definition it cannot be rigorous, because it fails to meet the basic laws of science and metatheory pertaining to pragmatism”. (2002 p.357)

This thesis follows a rigorous approach to the research as proscribed by several authors (Churchill 1979, Dunn, Seaker and Waller 1994, Nunnally and Bernstein 1994, Spector 1992), and is discussed further in section 8.4. This thesis also has relevance for theory and the industry of study, which is discussed later in this chapter.

8.4 RESEARCH DESIGN

8.4.1 Study Framework

The phenomena considered in this thesis are items or variables and resultant constructs of customer service and satisfaction in logistics, and their relationship to items or variables of logistics relationships. The 16 items prevalent in the literature and discussed in Chapter Seven are presented alphabetically in Table 8.2.

Three possible sets of constructs found in the literature were also discussed in Chapter Seven. Constructs are essentially unobservable variables, unlike manifest variables that are directly observable and measurable. Unobservable variables are termed latent and construct development and measurement issues of latent variables

require a stronger methodological approach within the logistics discipline (Dunn, Seaker and Waller 1994).

Accurate Invoices	Delivery Time
Action on Complaints	Easy Ordering
After Sales Support	Helpful Customer Service Representatives (CSRs)
Appropriate Order Cycle Time (OCT)	Ongoing Information
Availability	On-Time Delivery
Complete Orders	Order Short or Damaged (OSD)
Consistent Order Cycle Time (OCT)	Price
Customised Services	Return Policy

Table 8.2: Sixteen Items of Logistics Customer Service

This rigorous approach must carefully consider and discuss the concepts of constructs and internal and external validity. This is consistent with Mentzer and Kahn’s (1995) concern, echoed by Mentzer and Flint (1997) and de Vaus (1996). The order given here of construct, internal and external validity has been cited as particular for testing these concepts of validity (Churchill 1979, Dunn, Seaker and Waller 1994, Garver and Mentzer 1999, Gerbing and Anderson 1988, Mentzer and Flint 1997, Spector 1992).

Churchill (1979) and Dunn, Seaker and Waller (1994), from their respective disciplines of marketing and logistics, and Spector (1992) have each provided a framework for the development and validation of items and constructs in marketing and logistics. Two-stage methods were proposed in these frameworks and are shown in Table 8.3. For convenience, this general framework is referred to hereafter as the Churchill et al. framework due to Churchill’s initiation of this work

In the first step, the domain of the constructs must be specified (Churchill 1979, Dunn, Seaker and Waller 1994, Spector 1992). The domain of this thesis includes logistics customer service, customer satisfaction and relationships. Working definitions for each parts of the domain were provided in previous chapters. In the second step, items related to the constructs must be generated. The findings from the literature review discussed in Chapter Seven identified the 16 dominant items for

investigation, and contained in Table 8.2. Step three consists of using pilot surveys to develop and purify latent variables in step four, prior to conducting major empirical research in step five.

Step	Churchill regarding Marketing	Dunn, Seaker and Waller regarding Logistics	Spector regarding Scales
1	Specify domain of construct (Literature search)	Define constructs	Define constructs
	↓	↓	↓
2	Generate sample of items (Literature search, Experience survey, Insight Stimulating examples, Critical incidents, Focus groups)	Develop potential items, Check content validity, Confirm substantive validity	Design scale
	↓	↓	↓
3	Collect data	Pilot survey	Pilot test
	↓	↓	↓
4	Purify measure (Coefficient alpha, Factor analysis)	Exploratory factor analysis, Item to total correlation	Administration and item analysis
	↓	↓	↓
5	Collect data, Assess reliability (Coefficient alpha, Split-half reliability), Assess validity (Multitrait-multimethod matrix), Develop norms (Average and other statistics summarizing distribution of scores)	Test theory, Confirmatory factor analysis, Reliability, Convergent validity, Discriminant validity, criterion related validity (predictive and concurrent), Nomological validity	Validate and norm

Table 8.3: Two-Stage Methods for Item and Construct Development and Validation

(Sources: Churchill 1979, Dunn, Seaker and Waller 1994, Spector 1992)

This thesis follows the Churchill et al. framework in order to provide the rigour and relevance sought in logistics research. The pilot study discussed in Chapter Nine is akin to the first-stage or steps one to four in Table 8.3. The main study discussed in Chapter Ten is akin to the second stage or step five in Table 8.3.

8.4.2 Scale Development, Reliability and Validity

The utilisation of items in testing begins with the development of measurement scales. Nunnally and Bernstein defined measurement as rules for assigning objects to “(1) represent quantities of attributes numerically (scaling) or (2) define whether the objects fall in the same or different categories with respect to a given attribute (classification)” (1994 p.3). Churchill noted this definition has two features: “it indicates that we measure the attributes of objects and not the objects themselves” and it is “broad in that it does not specify how the numbers are to be assigned” (1987 p.315).

The nature of attribute measurement in this thesis pertains to the attitudes of respondents towards concepts of customer service and satisfaction and relationships as discussed in preceding chapters. From a psychological point of view, attitude is defined as “an implicit, drive-producing response considered socially significant in the individual’s society” (Doob 1967 p.43). Doob (1967) argued that a variety of stimuli or previous experiences evokes such a response, in the context of this thesis the stimuli or experiences are related to service quality and satisfaction.

Likert developed a summated rating scale to measure attitudes that consisted of “a great number of five point statements” (1932 p.21) that yields a normal distribution of responses. Likert argued that “it seems justifiable for experimental purposes to assume attitudes are distributed fairly normally and to use this assumption as the basis for combining the different statements” (1932 p.22).

Spector provided four characteristics of summated rating scales: “a scale must contain multiple items... each individual item must measure something that has an underlying, quantitative measurement continuum... each item has no ‘right’ answer... and each item in a scale is a statement and respondents are asked to give ratings about statements” (1992 p.1). Spector also gave three reasons for using this scale format: “it can produce scales that have good psychometric properties – that is good reliability and validity... it is relatively cheap and easy to develop... and it is

usually quick and easy for respondents to complete and typically does not induce complaints from them” (1992 p.2).

Psychometric properties about validity and reliability form part of the rigour demanded of researchers. Malhotra and Birks (2000) provided a diagram of the elements of validity and reliability that is shown in Figure 8.7. Each of the elements in the diagram will now be discussed in the context of this thesis.

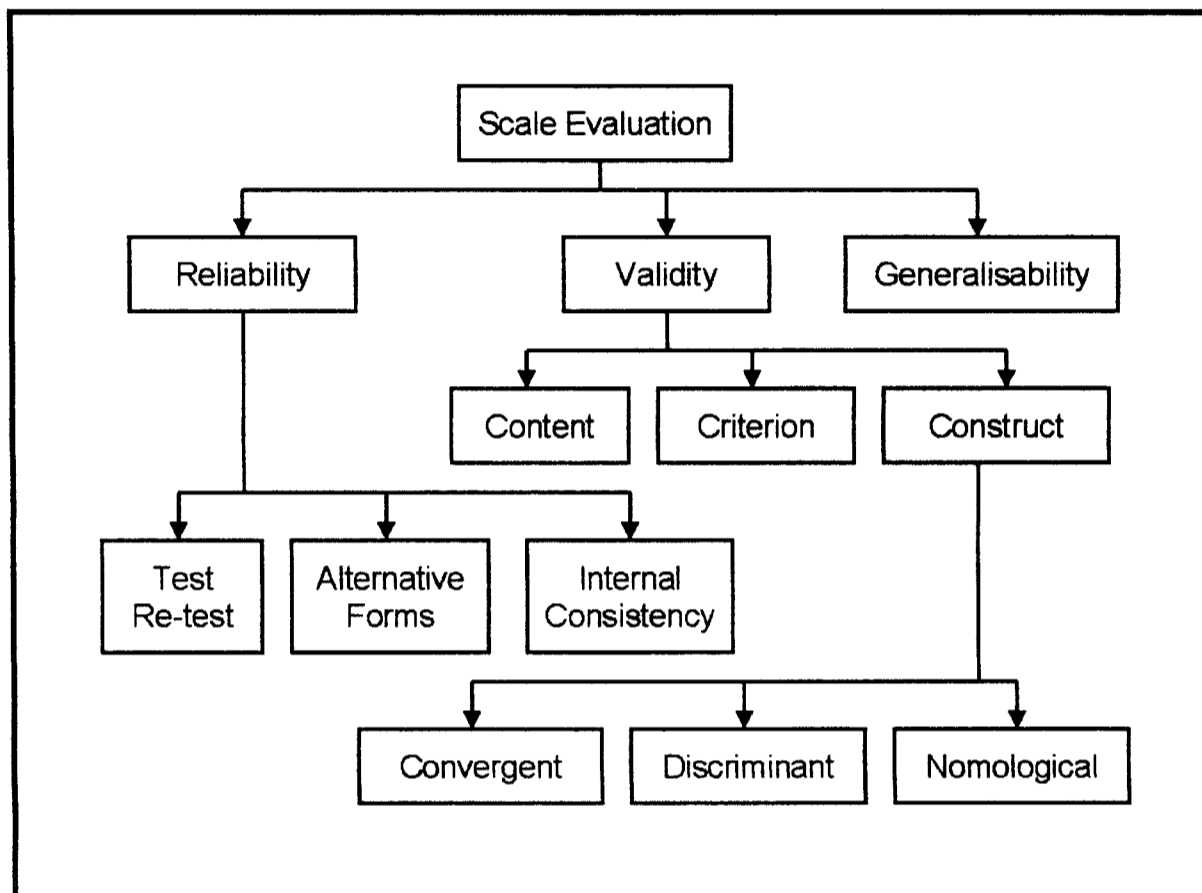


Figure 8.7: Scale Evaluation for Reliability and Validity

(Source: Malhotra and Birks 2000 p.304)

Validity refers to a scale measuring what it is supposed to measure (Carmines and Zeller 1979, Churchill 1987, Churchill 1979, Dunn, Seaker and Waller 1994, Malhotra and Birks 2000, Mentzer and Flint 1997, Nunnally and Bernstein 1994, Spector 1992). Malhotra and Birks considered validity to be “the extent to which differences in observed scale scores reflect true differences among objects on the characteristic being measures, rather than systematic or random error” (2000 p.307).

Reliability assures a scale can consistently measure something (Carmines and Zeller 1979, Churchill 1987, Churchill 1979, Dunn, Seaker and Waller 1994, Malhotra and Birks 2000, Mentzer and Flint 1997, Nunnally and Bernstein 1994, Spector 1992).

Scale reliability is a necessary precondition for validity, although validity is not necessary for an instrument or scales to be reliable (Carmines and Zeller 1979, Lam and Woo 1997). Accordingly, reliability will be discussed first. Spector (1992) differentiates between two types of reliability: the extent to which scales or instruments produce consistent results through repeated use or measurement, and the internal consistency of the items used to measure a latent construct, i.e. their intercorrelation.

The test/re-test method examines correlations of scale scores across two different administrations to the same respondents, whilst the alternative form method expands the test/re-test method by using different forms of the scale (Carmines and Zeller 1979, Malhotra and Birks 2000, Spector 1992). Both methods have problems with temporal and cost issues, and the nature of this thesis precludes the use of both methods on those grounds.

Internal consistency methods are used with the one data set and include split-half, i.e. splitting a data set in half and correlating scores, and coefficient alpha (Carmines and Zeller 1979, Cronbach 1951, Malhotra and Birks 2000, Nunnally and Bernstein 1994, Spector 1992). Coefficient alpha is a stronger method than split-half, as it is an average of all possible split-half coefficients resulting from different ways of splitting the scale items (Cronbach 1951, Malhotra and Birks 2000, Nunnally and Bernstein 1994). Cronbach argued the split-half method is really a measure of “how stable scores are and therefore can be called a coefficient of stability” (1951 p.298).

Coefficient alpha does have several shortcomings. It has limited use with tests concerned with speed (Nunnally and Bernstein (1994) and is sensitive to increasing with an increase of inter-item correlations and length of test items (Carmines and Zeller 1979, Nunnally and Bernstein 1994, Spector 1992). The latter shortcoming may mask deficiencies in a measurement scale in a satisfaction or service quality research using the Churchill et al. framework (Smith 1999).

Nevertheless, Nunnally and Bernstein considered it as a strong test and “perhaps the most important outcome as it provides actual estimates of reliability” (1994 p.212) and recommended it “should be applied to all new measurement models even if other estimates of reliability are also necessary” (1994 p.252). Flynn and Percy agreed and posited “reliability for the theoretical scale is best assessed with Cronbach’s alpha because high internal consistency is important for model fit” (2001 p.418).

Spector (1992) suggested calculating ‘item-remainder’ or ‘item-to-total’ coefficients and ‘alpha if item removed’ values to analyse items in conjunction with a scale’s coefficient alpha, and conducting factor analysis to ensure unidimensionality of the scale. Unidimensionality refers to the existence of a single trait or construct underlying a set of scale measure. Not only should all the indicators that define a scale provide estimates of exactly one factor, but the meaning of the underlying factor should correspond to the construct of interest (Churchill 1979). Coefficient alpha will be used in both pilot and main studies as a measure of internal scale consistency and will be further discussed along with the concept of unidimensionality where appropriate in Chapters Nine and Ten.

Turning now to validity, Nunnally and Bernstein noted that “authors have used different names to describe... types of validity” (1994 p.109). Mentzer and Flint concurred and argued the term is “often used loosely, but has a very specific meaning within a research context” (1997 p.200). However, Mentzer and Flint also used various validity component terms loosely, possibly as a result of using Rosenthal and Rosnow’s book *Essentials of Behavioral Research: Methods and Data Analysis* as a reference. For example, they considered content or face validity as “an important component of construct validity” (1997 p.208) whereas other authors considered it by itself or in terms of mutual support with construct validity (Churchill 1979, 1987, Malhotra and Birks 2000, Nunnally and Bernstein 1994). This thesis will adopt the names, definitions and considerations of validity as given by Malhotra and Birks (2000) and as outlined in Table 8.7, however any discrepancies with other authors will be noted for completeness.

Dunn, Seaker and Waller (1994) and Garver and Mentzer (1999) argued that content and substantive validity are an important part of the first two steps in the framework. Content validity, sometimes called face validity, is the extent to which items as a group correlate with a construct (Churchill 1979, Dunn, Seaker and Waller 1994, Malhotra and Birks 2000). Testing for content validity is primarily subjective and developed from literature reviews, experience surveys, insight stimulating examples, critical incidents or focus groups. Given its subjective nature, Malhotra and Birks considered content validity by itself an insufficient measure of scale validity “yet it aids in a common-sense interpretation of the scale scores” (2000 p.307).

Churchill (1979) considered it imperative that researchers consult the literature when conceptualising items and constructs. He also commented that if “a few more researchers had done so... the use of widely varying definitions” in certain marketing areas such as consumer research “could have been diminished” (1979 p.67). Dunn, Seaker and Waller noted that whilst “there is no rigorous way to assess content validity... multiple measures are typically used so that construct measurement will be thorough” (1994 p.157).

Dunn, Seaker and Waller (1994) presented substantive validity as different from content validity. Dunn, Seaker and Waller argued content validity deals with a set of items in a construct whereas “substantive validity deals with each individual item of a construct” (1994 p.157). Thus, a scale cannot have content validity without also having substantive validity. Substantive validity does not differ significantly from the concept of internal consistency reliability discussed by Malhotra and Birks (2000). Testing substantive validity entails item purification by eliminating those items that do not agree with the other items in the construct. Suggested purification techniques include exploratory factor analysis, item-to-total correlations or contribution to coefficient or Cronbach’s alpha (Dunn, Seaker and Waller 1994, Gerbing and Anderson 1988).

The thesis considers both forms of content validity. Content validity was intuitively developed and established through the literature review in Chapters Two through

Seven, whilst substantive validity will be confirmed within the data analysis of the pilot study. As discussed in Chapter Nine measures will be examined using exploratory factor analysis in an attempt to purify and reduce them.

Criterion validity, referred to as pragmatic validity by Churchill (1987) examines whether the scale performs as expected in relation to other variables selected as meaningful criteria, for example demographic or psychographic characteristics or scores from other scales. Criterion validity can take two forms: concurrent validity when scale and criterion data are being collected at the same time, and predictive validity or statistical conclusion validity per Mentzer and Flint (1997) when scale and criterion data are collected at different times (Malhotra and Birks 2000, Spector 1992). Criterion validity is simply measured by correlations between scale and criterion items, but whilst easy to assess is “rarely the most important kind of validity... we are often concerned with ‘what the measure in fact measures’ rather than simply whether it predicts accurately or not” (Churchill 1987 p.383). This thesis collected scale and demographic data at the same time, thus its concurrent validity is analysed and reported in Chapters Nine and Ten where appropriate.

Churchill (1979) considered the goal of most research is not just to develop unidimensional and reliable scales, but also to build and test theory. Essential to this undertaking is the assessment of construct validity. A construct achieves meaning in two ways: (1) through observed measures for which it is posited to be causally antecedent and for which it is not, and (2) through a set of relationships of the construct with other constructs as specified by some theory or a nomological network. Unidimensionality of a scale by itself is necessary but not sufficient for construct validity in the context of the total research domain (Churchill 1979).

Construct validity is concerned with what construct a scale is measuring and how well the scale measures it (Churchill 1987, Dunn, Seaker and Waller 1994, Malhotra and Birks 2000). Construct validity is the most sophisticated and difficult type of validity to establish and includes convergent, discriminant and nomological validity (Churchill 1979, 1987, Malhotra and Birks 2000, Mentzer and Flint 1997).

Convergent validity is confirmation or convergence of a relationship by independent measurement procedures (Churchill 1987) or the extent to which a scale correlates positively with other measures of the same construct (Malhotra and Birks 2000). Discriminant validity is the extent to which a scale does not correlate with other constructs from which it is supposed to differ (Churchill 1987, Malhotra and Birks 2000).

Mentzer and Flint (1997) combined convergent and discriminant validity with reliability and called them trait validity. Popular techniques for testing convergent and discriminant validity, as well as unidimensionality are confirmatory factor analysis (Campbell and Fiske 1959, Mentzer and Flint 1997) and structural equation modelling (Anderson and Gerbing 1988, Steenkamp and van Trijp 1991).

Finally, nomological validity is the extent to which the scale correlates in theoretically predicted ways with measure of different but related constructs (Malhotra and Birks 2000). From this validity a theoretical model is formulated such that a “nomological net is built in which several constructs are systematically interrelated” (Malhotra and Birks 2000 p.308). There is no statistical test for nomological validity, it is a “tightness of the theory building and the definition of the constructs” (Mentzer and Flint 1997 p.207).

However, the nomological network can be explored within the context of a structural equation model (SEM). Anderson and Gerbing (1988) developed a ‘two-step’ approach to SEMs where the measurement model is firstly developed and evaluated separately from the full SEM that simultaneously models measurement and structural relations amongst latent items. The measurement model together with the structural model allows a comprehensive confirmatory assessment of construct validity (Churchill 1979). The nature of SEM in the context of this thesis is discussed further in section 8.4 and Chapter Ten.

The second stage of the Churchill et al. framework comprises step five: collecting new data and performing confirmatory factor analysis (Churchill 1979, Dunn, Seaker and Waller 1994, Mentzer and Flint 1997). Whilst scale purification using exploratory factor analysis and coefficient alpha may be done with a pilot survey, new data collection and confirmatory factor analysis are required to test the remaining sub-components of construct validity (Churchill 1979, Dunn, Seaker and Waller 1994, Garver and Mentzer 1999, Spector 1992). Again, this thesis uses such techniques in the main study and they are further discussed in section 8.4 and Chapter Ten.

Generalisability is the extent to which the findings from a study based on a sample applies to the population of observation (Malhotra and Birks 2000, Nunnally and Bernstein 1994). Other authors have referred to generalisability as external validity (Churchill 1987, Mentzer and Kahn 1995). This thesis is investigating an industry sector and discussions about the industry and sample considerations that relate to generalisability follow in the next sections.

In summary, this thesis was undertaken using the Churchill et al. framework with a rigorous approach in order to ensure the findings have meaning and relevance as well as the rigour called for by many logistics and marketing researchers.

8.4.3 Industry of Study

The industry of study for this thesis is the UK food chain (UKFC). The whole UKFC consists of agriculture, horticulture, food and drink manufacturing, food and drink wholesaling, food and drink retailing, fisheries and aquaculture, and catering industries (Food Chain Group 1999). Patel, Sheldon, Woolven and Davey (2001) and the IGD (2002) have diagrammed the UKFC as shown in Figure 8.10.

Several authors have noted the economic significance of the UKFC (Ennew, McDonald, Morgan and Strak 1995, Gunthorpe, Ingham and Palmer 1995, Griffiths 1999, Fenn 2000). However, comparable and detailed sector statistics are difficult to amass and “just presenting the data in a consistent format... is a significant task”

(Ennew, McDonald, Morgan and Strak 1995 p.1). This difficulty is demonstrated by presentation of aggregate food chain data available from several sources. The Food Chain Group, a UK Government working group reported the UKFC accounts for gross added value of £56 billion to the UK economy, or 8% of GDP (1999 p.12). The UKFC, excluding the fisheries and aquaculture and catering sectors, also employs 3.3 million people or 12% of the UK's workforce (ibid.).

Figure 8.8 has been used by IGD in their publications and Internet site (2002) and provided values in certain sectors, as determined by IGD and Patel, Sheldon, Woolven and Davey (2001). They reported sector values of £16.5 billion for agriculture and fishing and £75.9 billion for food and drink manufacturing, however the latter includes tobacco in the sector value and is thus not directly comparable to the Food Chain Group's value reported above.

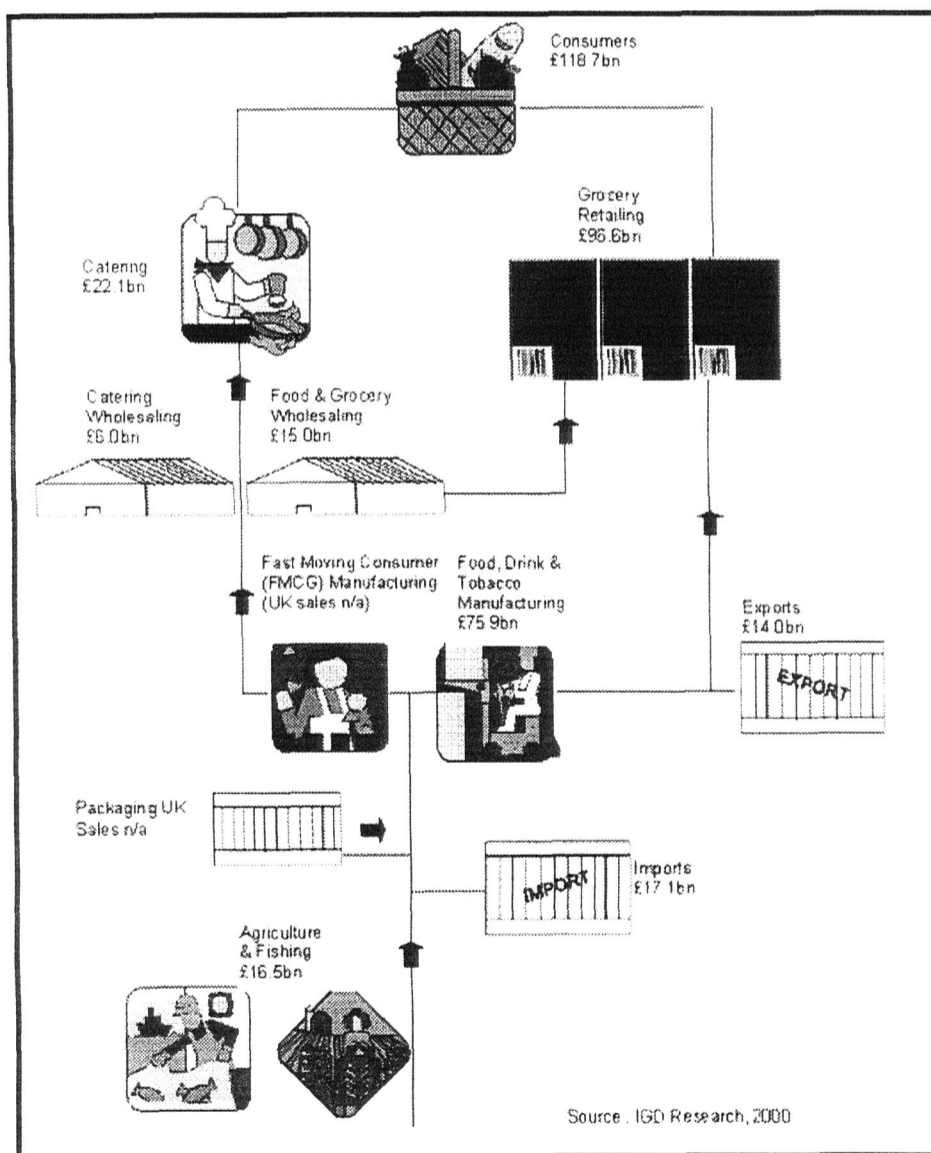


Figure 8.8: The UK Food and Grocery Supply Chain

(Source: Patel, Sheldon, Woolven and Davey 2001 p.5, IGD 2002)

Notwithstanding the differences in above values, the UKFC is an important component of the UK economy, and given its importance to society in terms of physiological needs, is an area worthy of study based solely on economics. Further, the sector is also undergoing changes in its supply chains or channels of distribution due to “recent socio-economic developments” such as “ageing populations and more double-income families” (van der Vorst and Beulens 1999).

The Food Chain Group (1999) noted the food and drink manufacturing (FDM) sector, net of alcoholic drink, accounts for gross added value of about £16.2 billion or 2.2% of GDP. The sector employs 455,000 people, mostly full-time. Thus, the FDM sector is a major factor in the total UKFC and represents about 25% of value added and employment.

The Food Chain Group recorded about 8,000 firms classified as food and drink manufacturers, but the sector is highly concentrated. “Although the ten largest manufacturers account for only 21% of sector turnover or revenue, for many products three firms account for over 75% turnover” (1999 p.44). There was also significant merger activity in the UK FDM sector during the 1980s due to perceptions that large-scale food production was required for global competitiveness in new and expanded markets, especially Europe, and the propensity of financial institutions to lend funds for acquisition growth (Ennew, McDonald, Morgan and Strak 1995). This led to a concentration in power amongst food manufacturers.

Despite this concentration, the number of firms in the FDM sector has grown by 43% since 1977. At that time there were about 5,600 firms classified as food and drink manufacturers and the ten largest manufacturers then accounted for 60% of employment and value added in the food sector (Tansey and Worsley 1995). Thus, there are still many relatively small firms. Browne and Allen reported that “around 85% of food, drink and tobacco companies had less than 50 employees and 60% had fewer than 10 employees in 1995” (1997b p.35).

There are many sub-sectors within the FDM sector however the sub-sectors of fresh food, except fruit and vegetable, are the focus of this study. These sub-sectors include meat, poultry and game, seafood and dairy. They have been selected for investigation due to their perishable nature and possibly unique customer service needs. The fruit and vegetable sub-sectors were not selected due to their non-processural nature and the fact they are largely imported to the UK market. Intermediate processors in the food supply chain are also of special interest as they are not only part of a traditional manufacturing sector but are “closely connected with agriculture, on the one hand, and retailing, on the other” (Strak and Morgan 1995 Foreword). Again, whilst detailed statistics are difficult to locate, the selected sub-sectors of meat, dairy and seafood represent between 50 and 60% of aggregate activity in the FDM sector. The editors at Key Note have provided value details by sub-sector for 1998 and 1999, shown in Table 8.4.

Values in UK Food Chain Sector (£ billion)	1998	%	1999	%
Meat and meat products	11.77	27.4%	11.61	26.6%
Dairy products, eggs, oil and fats	7.27	17.0%	7.62	17.5%
Fish and fish products	2.12	4.9%	2.19	5.0%
Total UK Food Market Sector	42.88	100.0%	43.62	100.0%

Table 8.4: Values of UK Food Chain Sub-sectors

(Source: Griffiths 1999, Fenn 2000)

Gunthorpe, Ingham and Palmer reported that the 2,449 meat processing firms in the mid-1990s consisted of 1,258 bacon curing and red meat processors and 993 slaughterhouses, and 250 poultry slaughter and processors (1995 p.235). Wilson, Trill and Strak reported there were nearly 400 UK milk and dairy product processors in the mid-1990s (1995 p.194). The Department for Environment, Food and Rural Affairs (DEFRA) reported there are currently about 541 fish processors (2002). These figures represent between 60%-43% of the 5,600-8,000 firms in the FDM sector noted above.

The UKFC has evolved significantly since the end of the Second World War. Four factors dominated the supply and distribution of food for over ten years in the post-war period: commonplace rationing, local or regional product sourcing and

provision, lack of a national distribution system, and consumers' low expectations. Supply chains as such were non-existent, and manufacturers and wholesalers controlled food distribution (Patel, Sheldon, Woolven and Davey 2001). Retailers grew in importance during the 1970s and 1980s for several reasons, including increased farming yields and consumer prosperity and road transportation development through the building of motorways and transport deregulation. As a result, power in the food supply and grocery chain started to shift to large multiple retailers such as Tesco, Sainsbury's and Asda. This shift in power enabled these large multiple retailers to realise operating profit margins of 7-8%, which is much more than margins of 2% in other EU countries or 1% in Australia. Moreover, whilst the total food industry 'profit pie' has grown from £1 billion in 1981 to £5 billion in 1992, the retailers' share of the 'pie' has increased from 20% to 40% at the expense of the manufacturers and processors (Tansey and Worsley 1995 p.124).

The concentration of power amongst the large multiple retailers has led them to integrate supply chains and develop and own regional distribution centres (RDCs). They have also outsourced logistics and supply chain activities and introduced technological tools such as EDI and ECR as discussed in previous chapters. These actions have transformed the food industry from a "production push to a consumer pull supply chain" (Finegan 2002 p.5) and has been driven by "the drum beat of consumer demand" (Patel, Sheldon, Woolven and Davey 2001 p.116). This transformation and resulting emphasis on customer service, as retailers have defined it, is consistent with a market orientation and the renewed logistics customer service focus discussed in Chapter Three. The focus of this thesis is on the meat, dairy and seafood sub-sectors of UK food processors and is not concerned with primary producers, i.e. farmers or fishermen, or retailers. However retailers as customers of food processors and current drivers of change in the UKFC need to be understood in this context.

Whilst many authors recognise the growth of retailer concentration and the subsequent shift in UKFC control, it is difficult to determine the extent to which such control has affected food manufacturers or processors. "Research has indicated that

food retailers may have substantial scope for the exercise of market power, but empirical evidence as to the extent to which food retailers have exercised market power in the UK has not been reported” (Ennew and McDonald 1995 p.68). The IGD and others (Ferne, Pfab and Marchant 2000, Alvarado and Kotzab 2001) have promoted the benefits in closer supplier-retailer integration, technological advancements and relationships resulting from such industrial concentration. However, other authors have criticised this concentration on grounds of coercive power and retailer motives (Shaw and Gibbs 1995, Tansey and Worsley 1995, P-E International 1991, Food Chain Group 1999).

Research in the UKFC has generally focussed on one or two firms in isolation, and has considered relationships and the positive effects of retailer-supplier collaboration, usually from the retailer’s perspective. For example, Shaw and Gibbs (1995) studied two different category food chains using an action research approach. They noted that “levels of trust, commitment and information sharing, which are required if productivity and other gains are to be maximized, cannot easily be reached within a relationship which is primarily adversarial” (ibid.). However, methodologies based on the study of an individual firm are limited in terms of generalisation across an industry sector, and the opportunity to examine a significant number of actors in the UKFC likewise cannot easily be realised. Moreover, levels of trust between retailers and suppliers in the UKFC may not be as collaborative or as cordial as some authors would like due to retailer control and perceived power. Issues affecting logistics relationships were discussed in Chapter Six. Specific examples from the UKFC pertaining to these sub-sectors follow.

P-E International (1991) surveyed 54 grocery suppliers and 9 grocery retailers, amongst other industry sectors, regarding partnership development during the 1990s. Grocery retailers were “very keen on mutual objectives and two-way communication, but less enthusiastic about full involvement in each others’ businesses” leading to the proposition that “mutual objectives will be set by retailers” (1991 p.14), “perhaps because they are expected to be the principal beneficiaries” (1991 p.18). Grocery suppliers on the other hand were “less enthusiastic about two-

way communication, mutual objectives and many of the technological developments” but were keener for “full involvement in each others’ businesses” (1991 p.15). Thus, P-E International concluded there was “widespread doubt and suspicion... about retailer moves to develop relationships into partnerships” which supported the “notion of one-sided partnerships, and the need for reciprocity” (ibid.).

Robson and Rawnsley (2001) supported the original P-E International contentions whilst interviewing food industry managers in a qualitative study some ten years later. They found that although supermarkets should be leading the way in developing vertical relations in the UKFC, in practice partnerships and relationships have not fully developed unless they are on retailers’ terms. They noted the IGD’s model of ethical behaviour “excludes supply chain relationships... in favour of... product safety and manufacturing efficiency” (2001 p.47).

Lastly, Fearn (1998) examined partnerships in the UK beef supply chain. He noted they “have been difficult to establish and slow to develop” but argued they “are the only sustainable form of trading relationship in the long term” (1998 p.214). He noted four key drivers behind the evolution of partnerships in this sector: changing attitudes and purchasing behaviour of meat consumers, competitive strategies of supermarket chains, the 1990 Food Safety Act, and the effects of the BSE crisis. These drivers will lead actors in the UK beef supply chain to develop partnerships, but Fearn also noted “partnerships, in certain circumstance, may offer no improvement in returns to producers over the open market” (1998 p.230).

Food processors fear retailers are not conducive to establishing or maintaining relationships or partnerships, and evidence to date has partially supported that contention. However, what is the nature of UK food processors? Stank, Daugherty and Ellinger (1998) discussed logistical service capabilities of personal product and prepared food supply chains. They cited a former president of American Express as stating “in a commodity-like business, service is the only way to create product differentiation” (1998 p.78), which they included to mean logistics or distribution service. Stank, Daugherty and Ellinger (1998) interviewed restaurant managers in

their role as food service customers and retailers of personal products to develop a continuum of logistical capabilities that suggests capabilities such as cost minimisation or TQM lead to operational effectiveness, but do not lead to 'customer closeness' or relationships. Stank, Daugherty and Ellinger's contention that "as clichéd as it sounds, business really does begin and end with the customers" (1998 p.79) also suggests that existing conceptual research in food chains is unsuitable for understanding customer service and ultimately customer satisfaction. They noted that "identifying core operational service elements is a minimum requirement for competing, but it will certainly not be enough to distinguish a service provider from the pack, or guarantee that customers will be loyal" (ibid.). Browne and Allen (1997a) argued that firms in food manufacturing are considering and changing the range of services they expect from their suppliers which will entail different logistics service capabilities posited by Stank, Daugherty and Ellinger.

Flanagan (1992) conducted a study of customer service requirements of UK food processing buyers. He conducted a postal survey followed by structured interviews with buyers in his main research sample. He found that decision factors influencing buyers to purchase from a supplier were, in order of importance, product quality, price, reliability of supply, response to problems, and delivery lead times. He also found that the essential elements of customer service from the buyer's perspective were, again in order of importance, continuity of supply, advice on non-availability, delivery on the day required, condition of goods on arrival, and emergency deliveries.

Flanagan's work offers some insight into the food processing sector however has shortcomings in its presentation. The article is very brief and does not adequately discuss his research methodology and analysis. Thus it is difficult to substantiate research validity and reliability and appears to suffer from a lack of rigour. Nevertheless, it is useful as exploratory background for this thesis.

Collins, Henchion and O'Reilly (2001) tested the customer service performance of Irish and non-Irish food manufacturers and exporters amongst UK retail grocers, as

noted in Chapter Seven. They used a hand-delivered survey questionnaire to eighteen total buyers in four UK retail grocers and used a SERVQUAL-type instrument to determine attribute importance and performance. They found Irish food manufacturers lagged non-Irish manufacturers in customer service performance, particularly with regard to on-time delivery. They also found performance amongst Irish manufacturers improving where they had inventory consolidation centres located in Great Britain. This finding supports retailers' desires to have manufacturers and processors develop such centres to serve their RDCs. However, Collins, Henchion and O'Reilly's study suffers from limited data collection and statistical significance issues. Their study analysis is also limited in terms of the SERVQUAL methodology, they did not calculate any difference score between importance, i.e. expectations, and performance or make any attempt to consider satisfaction or dissatisfaction in this industry.

Dzever, Merdji and Saives (2001) interviewed 30 French food processors, comprised of 15 meat, 11 fish and 4 vegetable processing firms, across three dimensions of industrial purchasing, technical, commercial and social, to determine which dimensions were crucial for suppliers to meet in trying to establish relationships with their customers. They found twelve important variables across all three sectors and dimensions. The important variables were supplier's technical know-how, product simplicity and adaptability to specific needs, technical service and durability (technical dimension), contract terms, warranty and supplier's image (commercial dimension), and buyer-seller partnership, loyalty, respect for delivery schedules and respect for deadlines during tender bids (social dimension). Whilst Dzever, Merdji and Saives recognised sample size data collection method limitations to their study, they concluded their findings show which variables purchasers consider the most important in supplier evaluation and selection and relationship development. They called for a quantitative study of a larger sample across all regions of a country with a "more robust approach to data collection and analysis" that "would go a long way in strengthening the research base... and help shed further light on these issues" (2001 p.227).

In summary, the industry of study chosen was a sub-sector of the UKFC comprised of meat, poultry and game, dairy and seafood producers. This group is economically significant to the UK economy and is thus worthy of investigation. Research studies so far have not substantially or rigorously considered customer service and satisfaction in UK food chains, and increasing concentration of retailer and manufacturer power may have significant managerial effects on the many smaller actors in this sub-sector as regards customer service and satisfaction and relationships.

8.4.4 Study Samples

The UK industry sub-sector of meat, poultry and game, dairy and seafood producers being investigated has an indeterminate population of the 8,000 firms classified as food and drink manufacturers (Food Chain Group 1999). As population members are businesses, appropriate sampling frames can be derived from industrial databases. Two different samples were required for the two different stages in the Churchill et al. framework.

As will be discussed further in Chapter Nine, the pilot study was conducted amongst Scottish food processors. The sample frame came from a Scottish Enterprise public database listing of the meat, poultry and game, and seafood sub-sectors in the food producers industry (Scottish Enterprise 1998). Dairy producers were excluded in the sample for the pilot study due to their small overall numbers and the preponderance of retailers and primary producers. The over 1,000 firms in the total Scottish Enterprise listing represents more than 50% of all Scottish food producers (Scottish Trade International 1999). There were a total of 422 firms listed in the meat, poultry, game, and seafood sub-sectors and all were selected for surveying. The sample was therefore a census of all members of the listing. The total listing did not include all members of the total population of Scottish food processors in the selected sub-sectors, yet it did fairly represent a majority of the population (Churchill 1987, Malhotra and Birks 2000, Remenyi, Williams, Money and Swartz 1998). Thus, whilst not a probability sample, the representativeness of the census and its large size

invoking the Central-Limit Theorem allows for statistical analysis of resultant data that may be inferred to the population (ibid.).

As will be discussed further in Chapter Ten, the main study was conducted amongst UK food processors excluding those considered for the pilot study. The sample frame came from a database listing of UK food processors entitled *The Grocer Directory of Manufacturers & Suppliers 2000* purchased from the publisher William Reed. The over 7,000 firms in this listing represented almost 90% of total UK food producers. The sample selected was drawn from the database listing for the meat, poultry and game, seafood and dairy food sub-sectors. The latter were included in the main study as there were significantly higher number of firms. There were a total of 1,215 firms listed in these sub-sectors and again all were selected for surveying. The sample was also a census and likewise considered representative of the total population for data analysis purposes.

8.4.5 Data Collection and Research Instruments

This thesis utilised quantitative surveys for data collection from the two sample frames discussed above. This method was selected as it properly fits the positivist nature of enquiry discussed in section 8.2. Although there are other ways to conduct research in the social sciences “when the social group to be studied is larger, involving a wider community such as an industry sector, then data must be obtained from as representative a sample as possible of the target population, and a survey is the appropriate method. Data are collected by postal questionnaire and/or interview and analysed by standard statistical techniques to establish relationships between variables” (Hill, Nicholson and Westbrook 1999 p.144).

The research survey instruments were self-administered postal questionnaires. The pilot study instrument is contained in Appendix Two whilst the main study instrument is contained in Appendix Three. Other survey alternatives included interviews and telephone surveys (Remenyi, Williams, Money and Swartz 1998, Robson 1993). However, they were not selected due to time and cost constraints

surrounding this thesis to undertake an extensive interview series with sufficient respondents.

Postal questionnaires enable collection of data from large samples with wide geographic coverage at relatively low cost. They also provide a relatively simple and straightforward approach to the study of attitudes, beliefs and motives and solicited information from the sample with high amounts of data standardisation and concentration of control (Diamantopoulos and Schlegelmilch 1996, Whitley 1985).

Disadvantages of postal questionnaires include low response rates, undetectable ambiguities and misunderstandings in the survey questions, and the possibility of social responsibility response bias (Oppenheim 1992, Remenyi, Williams, Money and Swartz 1998, Robson 1993). Techniques suggested in the literature to increase response rates and respondent 'buy-in' were used to mitigate these disadvantages and are discussed next.

Sterling and Lambert (1987) argued that empirical customer service research in the literature has suffered from small sample sizes and low response rates which affect the ability to perform meaningful statistical analyses and thus develop appropriate rigour. They recommended utilisation of meaningful and larger samples.

Other suggestions to increase response rates from postal surveys have included obtaining survey sponsorship, using personalised cover letters, professional stationary, and self-addressed stamped envelopes (SASE), assuring confidentiality, pre-notifying respondents, using first-class mail and providing various incentives (Diamantopoulos and Schlegelmilch 1996, Earp and Hunter 1999, Greer, Chuchinprakarn and Seshadri 2000, Harvey 1986, Schlegelmilch and Diamantopoulos 1991, Wunder and Wynn 1988).

All suggestions except obtaining survey sponsorship and first-class mail were utilised in the pilot study. Additionally, the main study did not use pre-notification

due to time and cost constraints. The implementation of these suggestions are discussed further in Chapters Nine and Ten.

Questions were designed to be specific and closed for data standardisation and non-ambiguous interpretation. Measurement about demographic and 'yes-no' questions was made at the nominal or ordinal level for frequency analysis. Measurement about expectations and perception questions for customer service and customer satisfaction or other ranking questions was made at the interval level using a 5 point Likert scale for multi-variate quantitative analysis. These latter questions were used for attitude measurement (de Vaus 1996, Oppenheim 1992).

There is a debate whether these latter questions are interval or ordinal as the intervals or difference between each number in the scale do not necessarily have the same meaning (Nunnally and Bernstein 1994)). In common practice these questions are almost always treated as interval especially in marketing research (Churchill 1987: Malhotra and Birks 2000, Remenyi, Williams, Money and Swartz 1998). Further, Traylor examined the literature and correlations among simulated data and concluded ordinal data can "be treated as interval data without a great loss in accuracy and with a great gain in interpretability" (1983 p.302). Schertzer and Kernan also examined the robustness of scales and similarly concluded that although the scales they examined were ordinal in metric one could "relax some numerical criteria as to what constitutes... equality of intervals between values" (1985 pp.278-279).

Similarly, there is no consensus over how many points should be used in a Likert scale, either 5, 7 or 9. Common practice stemming from Likert (1932) is to use 5 points to reduce respondent confusion and time (Mentzer, Flint and Kent 1999, Robson 1993). Lissitz and Green (1975) simulated results from both a 5 and 7 point Likert scale to examine reliability scores. They concluded 7 scale points are not an optimal number as there was a "definite levelling off in the increase of reliability after 5 scale points" (1975 p.13).

Pre-testing questionnaires is strongly recommended to detect deficiencies in design, administration and question wording (Oppenheim 1992, Remenyi, Williams, Money and Swartz 1998, Robson 1993). Both instruments were pre-tested by administering them to staff members of the Scotch Quality Beef & Lamb Association Limited (SQBLA). SQBLA is an industry association representing almost 10,000 members in the beef and lamb supply chain from 'farm to plate' (Scotch Quality Beef & Lamb Association Limited 1999). Their remit includes providing total quality assurance for Scottish beef and lamb products and marketing these products across the UK and Europe. Results of the pre-test led to minor wording changes in the questionnaires and an increase in possible completion times advised to respondents.

Lambert and Harrington (1990) discussed three techniques for checking response and non-response bias particularly in postal surveys. The first technique examines demographic, sociological and geographic compositions of both respondents and non-respondents. The absence of non-response bias is inferred if there are no significant differences. This technique was not selected due to insufficient demographic data collected in either study. The second technique involves sampling non-respondents after planned survey waves are completed. The survey instrument is condensed to include key variables derived from analysis and it is sent to a sample of non-respondents. This technique was not selected due to there being only one real response wave and time and resource constraints associated with both studies. Also, this technique does not address whether non-respondents would consider a reduced instrument the same as the primary instrument.

The third technique compares different waves and infers non-response bias is non-existent if there are no significant differences between survey variables. The weakness with this approach is the difficulty in assessing direction and magnitude of significant non-response bias. Further, temporal issues may affect large-scale surveys, such as changes in a respondent's environment. Notwithstanding its limitations, a modification of this technique was selected as being the most practicable for this thesis. Respondents were split according to when their responses were received to examine differences in responses between the first (early) and last

(late) quartile, which were considered to be different waves, and tested using this technique. Again, further discussions regarding these tests are contained in Chapters Nine and Ten.

8.4.6 Data Analysis

As discussed in section 8.3, this thesis uses the Churchill et al. framework to investigate and analyse data collected from the two survey questionnaires. Details of individual tests are given where appropriate in Chapters Nine and Ten. This section generally describes the tests and issues undertaken.

Descriptive statistics involving data frequencies, means, standard deviations and cross-tabulations will be performed for all data. The pilot study, as the first stage of the Churchill et al. framework, will also consider respondents' expectations and perceptions regarding their service encounter similar to PZB's SERVQUAL model.

As noted in Chapter Four there are many methodological issues with the SERVQUAL instrument (see Smith 1995, Flynn and Percy 2001 amongst others), including its generalisability to other industries. The literature yielded 16 items that pertain to the logistics context and these items will be examined using an expectations – perceptions technique to determine differences between satisfied and dissatisfied customers.

EFA will be used to examine any latent constructs and internal consistency of individual items across Scottish food processors. Factor analysis is a multi-variate analysis technique that determines underlying dimensions or factors in a set of interrelated (correlated) variables (Child 1990, Hair, Anderson, Tatham and Black 1995, Loehlin 1998, Nunnally and Bernstein 1994, Spector 1992, Stewart 1981). EFA is used when the underlying factors are not known a priori to explore the data for such factors (Child 1990, Loehlin 1998, Spector 1992, Stewart 1981).

Issues in EFA include the type of analysis method used, the number of factors to extract, factor loadings applied to the variables and rotation of factors (Hair,

Anderson, Tatham and Black 1995, Loehlin 1998, Nunnally and Bernstein 1994). These issues will be further discussed in Chapter Nine as they pertain to the analysis undertaken for the pilot study.

The main study, as the second stage of the Churchill et al. framework, will use confirmatory factor analysis (CFA) and SEM to determine the validity, reliability and relationships amongst the remaining items and any latent constructs. CFA is different from EFA in that it attempts to confirm or test a priori hypotheses about the possible structure of dimensions or factors by selecting and fitting variables to the structures. Issues in CFA also include measures of reliability and unidimensionality (Child 1990, Loehlin 1998, Spector 1992, Stewart 1981).

SEM is also a multi-variate analysis technique that examines a set of dependence relationships simultaneously using regression and covariance amongst latent constructs or variables (Hair, Anderson, Tatham and Black 1995, Loehlin 1998, Schumacker and Lomax 1996). Full SEM consists of a two-stage approach using a measurement model and a structural model (Anderson and Gerbing 1988).

CFA forms the basis of the former; thus issues affecting CFA also affect SEM as well as issues of structural model fit. Again, issues surrounding CFA and SEM will be further discussed in Chapter Ten as they pertain to the analysis undertaken for the main study.

8.5 CONCLUSION

This chapter discussed and provided a rationale for the research objectives, approach and methods undertaken in this thesis. It first justified the positivist and quantitative research approach adopted within the contexts of the logistics and marketing disciplines. Next, the chapter introduced and discussed the framework of Churchill et al. for the development of measurement scales and constructs as the basis for a rigorous approach to this thesis, and the corresponding issues of reliability and validity. The application of the two-stage approach found in the framework and

details of both the pilot and main studies that comprise the primary research components of this thesis were then outlined. The industrial sector of UK food processing and the development of research samples were discussed, and finally, data collection, research instruments and analysis tools were briefly introduced as a precursor to more detailed discussions in Chapters Nine and Ten regarding the pilot and main studies respectively.

The emphasis of rigour across the research design answers a call by logistics academics to apply rigorous techniques to increase reliability, validity and meaning in logistics research. Further, the positivist and quantitative methods undertaken follows time-honoured approaches in both logistics and marketing research. Finally, the use of conceptual models related to services marketing and service quality provides an inter-disciplinary flavour to the research, which has also been called for by both logistics and marketing academics. Chapter Nine now discusses the pilot study conducted in Scotland.

CHAPTER NINE

THE PILOT STUDY

9.1 INTRODUCTION

This chapter discusses the pilot study conducted using the first stage of the Churchill et al. framework to test the research questions in the last chapter. This stage employs four steps from the framework. Steps one and two regarding construct domains and item generation have been discussed in preceding chapters. Steps three and four regarding data collection and analysis and possible ‘purification’ are the focus of this chapter. The data collection method used is described first for the research criteria set out in Chapters Seven and Eight, and details of the collection instrument and processes are provided. Next, data analysis and ‘purification’ efforts according to the Churchill et al. framework are presented. Then, post-pilot study considerations are discussed and the chapter concluded as a prelude to discussions of the main study in Chapter Ten.

9.2 DATA COLLECTION METHOD

9.2.1 Sample and Survey Contact

The industry of study selected was the meat, poultry and game, and seafood sub-sectors of the Scottish food processing sector. The sample for the study was drawn from a Scottish Enterprise public listing of the meat, poultry and game, and seafood groups in the food producers industry sector (Scottish Enterprise 1998) as discussed in the last chapter. The over 1,000 firms in this listing represent more than 50% of total Scottish food producers (Scottish Trade International 1999). There were a total of 422 firms listed in the meat, poultry, game, and seafood groups. This is not the entire population

of such firms in Scotland, but is considered comprehensive and representative of these segments (Simpson 1999). The sample did not include the over 15,000 farmers and fishermen or the over 700 butchers, fishmongers and retailers in Scotland that form the anchors of the food supply chain (Scottish Trade International 1999). This situation was set out in the delimitations for this thesis in Chapter One and Eight, however some of the firms surveyed do sell to final or end-consumers as part of a 'store-front' to their processing facilities. This sample was therefore a census of the database listing and was readily available to survey (Remenyi, Williams, Money and Swartz 1998).

After deleting duplicate listings, a sample frame of 397 firms was selected for surveying. The sub-sector breakdown was 100 meat, 24 poultry and game, and 273 seafood firms. About one-half of the sampling frame was selected for personal telephone contact or solicitation prior to sending out a survey package in order to test the effect of pre-notification (Diamantopoulos and Schlegelmilch 1996, Earp and Hunter 1999, Schlegelmilch and Diamantopoulos 1991, Wunder and Wynn 1988). A systematic sample of every other firm was utilised from a random start point in each group. Fifteen random numbers were generated from the Internet web site www.organizer.org and every fourth number was chosen to select the start point in each of the three groups. The resultant start points were firm number eight for meat, firm number six for poultry and game and firm number one for seafood.

A total of 193 firms were contacted, 47 in meat, 11 in poultry and game, and 135 in seafood. The other 204 firms in the sampling frame were sent survey packages on an unsolicited basis (unsolicited group). Two contact attempts were made per firm and no contact was made with 60 firms (solicited, no contact group). Contact with 116 firms took one of three forms: direct contact with the respondent, contact with and subsequent referral from someone other than the respondent, and a message left on an answering machine (solicited, contact group). There were 9 obsolete telephone listings and 8 firms refused to participate in the research, reducing the total sample surveyed to 380 firms.

This sample size is considered sufficient to perform meaningful statistical analyses and develop appropriate rigour (Hair, Anderson, Tatham and Black 1995, Mentzer and Flint

1997) and meet concerns that empirical research in logistics literature has suffered from small sample sizes and low response rates (Sterling and Lambert 1987). A script shown in Appendix Four was used during the contact to ensure consistency and reduce interviewer bias.

One meat-producing firm that declined to participate provided an amusing anecdote regarding supplier customer service. The firm is a one-man processor in the Scottish Borders. The proprietor indicated that he didn't want to participate as he "wasn't interested in supplier customer service," as he "was only interested in his customers." When it was noted to him that suppliers might affect his ability to meet customer needs and he therefore might be interested in adding to the research, his simple response was that "if the suppliers did not meet his needs then they were no longer supplying to him."

9.2.2 Survey and Instrument Details

All firms received a professional, personal and tailored covering letter, shown in Appendix Five. The letter was designed to establish research credibility, discuss the research, benefits for respondents and survey mechanics, note the response deadline, assure confidentiality, and offer a copy of the survey results as an incentive (Diamantopoulos and Schlegelmilch 1996, Earp and Hunter 1999, Harvey 1986, Wunder and Wynn 1988). The research survey instrument was a self-administered questionnaire, shown in Appendix Two. Questions were designed to be specific and closed for data standardisation and non-ambiguous interpretation (Oppenheim 1992), except where some clarification or additional information was required (Hair, Anderson, Tatham and Black 1995, Remenyi, Williams, Money and Swartz 1998, Robson 1993).

Measurement of demographic questions for control data about respondents and 'yes-no' questions was made at the nominal or ordinal level for frequency and cross tabulation analysis (Hair, Anderson, Tatham and Black 1995, Remenyi, Williams, Money and Swartz 1998, Robson 1993). Measurement of attitudes regarding expectations and perceptions of customer service and satisfaction (Ajzen and Fishbein 1980, Fishbein and Ajzen 1975, PZB 1985) were made at the interval level using a 5 point Likert scale

for multivariate quantitative analysis (Hair, Anderson, Tatham and Black 1995, Remenyi, Williams, Money and Swartz 1998, Robson 1993). Descriptive statistics and exploratory factor analysis to examine constructs (RQ₃) were derived from the data using SPSS statistical techniques (Norušis 1993).

The instrument was pre-tested by administering it to five staff members of the Scotch Quality Beef & Lamb Association Limited (SQBLA). SQBLA is an industry association representing almost 10,000 members in the beef and lamb supply chain from 'farm to plate' (Scotch Quality Beef & Lamb Association Limited 1999). The pre-test yielded minor wording changes in the questionnaire and an increase in possible completion times advised to respondents.

Section 1 of the questionnaire listed the sixteen different customer service variables. Respondents were asked to indicate on a five-point Likert scale whether they agreed or disagreed with each variable as it pertained to their firm's expectations of their suppliers (Questions 1-16). A 'not applicable' response was also allowed. This provided data about the firm's expectations of their suppliers (RQ₁).

Section 2 asked respondents to rank the top five variables in order of importance. This section was added from presentation discussions of this proposed study at a doctorate workshop sponsored by the European Logistics Association. The reason for this addition that stemmed from discussions was to see how important the variables are to firms in addition to whether they are important (RQ₁).

Section 3 asked whether there were other customer service variables respondents considered important to their firm that were not within the sixteen provided. This was to ensure that variables important to respondents were not overlooked (RQ₁).

Section 4 asked respondents to consider their most recent delivery of supplies and indicate whether they agreed or disagreed with the statement that they received each customer service variable from their supplier (Questions 17-32). The sixteen customer service variables were repeated here as well as a response for 'not applicable'. This

provided data about the firm's perceptions of an actual delivery event and the supplier's performance (RQ₂). Section 4 also queried the type of supplies, typicality and frequency of delivery and importance of the supplier (Questions 33-36). This was to provide data about the nature of the actual delivery and its impact on the firm's ongoing operations. Respondents were asked whether or not they were satisfied overall with the actual delivery of supplies (Question 37). This was a dichotomous 'yes-no' variable and represented the outcome of the service experience and the difference between the firm's expectations and perceptions (RQ₂).

Section 5 asked for control information about the firm and respondent (Questions 38-43). The purpose here was to determine whether firm size and the number of suppliers and deliveries affected the firm's expectations and perceptions about the customer service variables. Question 40 asked whether the respondent was the only person responsible for looking after deliveries. There may be differences in the importance of customer service variables among different actors responsible for inbound logistics (RQ₁).

Finally, respondents were provided with an opportunity to request a copy of the survey results as their incentive to participate (Diamantopoulos and Schlegelmilch 1996, Earp and Hunter 1999).

9.2.3 Survey Process and Response

The letter and questionnaire packages were mailed with second-class postage ten days before the response deadline noted in the covering letter. The responses were tracked according to their postmark date and compared to the mailout date. The response pattern is shown in Figure 9.1. The first responses were postmarked the day after the mailout date whilst the last response received from the initial mailout was postmarked 39 days after the mailout date.

The initial mail-out yielded 93 responses (25%) from the 380 questionnaires posted and included 37 responses (18%) from the unsolicited group of 204, 12 responses (20%)

from the solicited, no contact group of 60, and 44 responses (38%) from the solicited, contact group of 116.

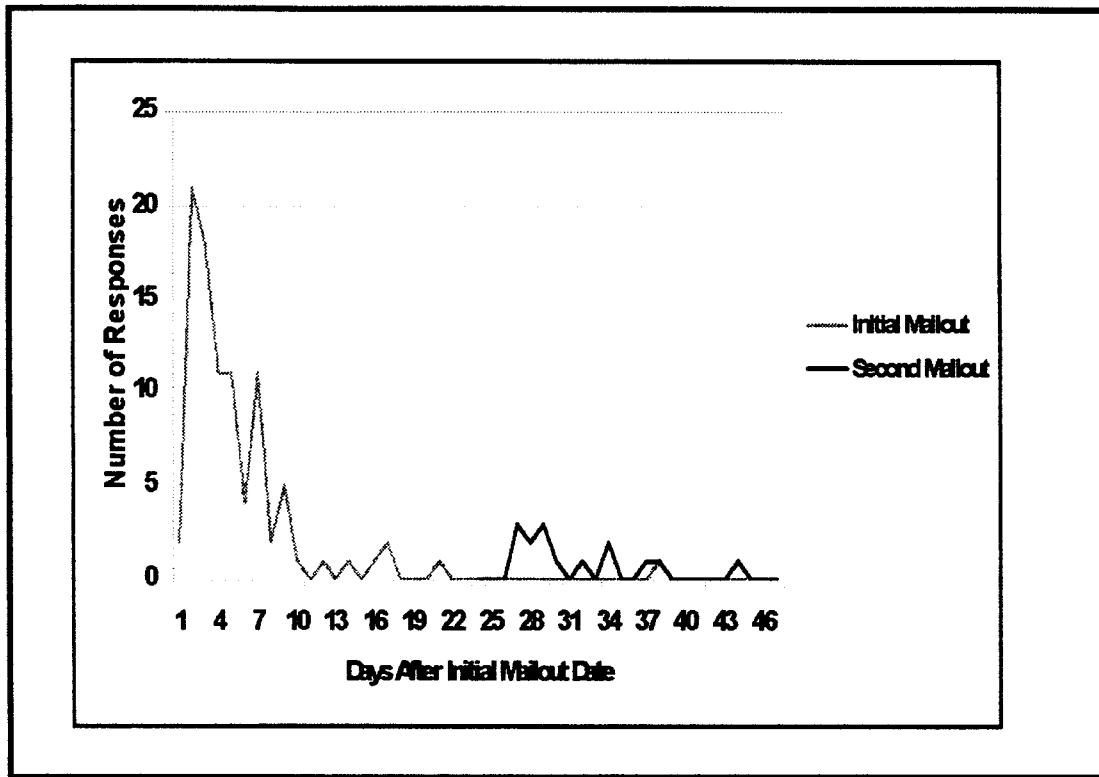


Figure 9.1: Mailout Response Patterns

Sixty-four to eighty responses are sufficient to undertake exploratory factor analysis of 16 variables at a ratio of four to five respondents per variable (Hair, Anderson, Tatham and Black 1995). However, ten respondents per variable, or 160 responses, is more acceptable and becoming the norm (Dunn, Seaker and Waller 1994, Hair, Anderson, Tatham and Black 1995).

Seventy-two firms in the solicited, contact group did not respond to the initial mailout. These firms were sent a follow-up letter, shown as Appendix Six, together with another questionnaire and SASE that again invited them to participate in an attempt to increase the number of responses. The unsolicited and solicited, no contact groups were not used for follow-up as they were unlikely to provide large numbers of responses for the effort and expense involved. This omission raises the issues of social responsibility response bias due to the former group's desire to participate, as well as any non-response bias of the 272 total non-respondents (Lambert and Harrington 1990).

The second mailout was posted 24 days after the initial mailout date and had a deadline date of 15 days after the second mailout date. The last response was postmarked 21 days

after the second mailout date, thus total survey response time for the pilot study was 45 days. The response pattern for this group is also shown in Figure 9.1. The second mailout yielded only 15 additional responses from this follow-up group of 72 and the proportionate response rate (21%) was similar to the response rates for the unsolicited and solicited, no contact groups.

There were 105 usable questionnaires from the 108 returned. Two firms returned their uncompleted questionnaire and apologised as both were no longer in business. One firm from the follow-up group returned both sets of questionnaire and SASEs together with the following comment: “Sincere apologies for not having completed your questionnaire, regrettably time has been against me and I am now off on holiday.”

A breakdown of the sample contact-no contact group responses is shown in Table 9.1. An overall response rate of about 28% was reached after the second mailout. The intervention of the second mailout positively skewed the response percentage from the solicited, contact group as the proportionate response rate was just over 49%, thus a χ^2 test was not performed on the differences between response and mailout distribution as the result would have been statistically meaningless (Robson 1993).

Type of Contact	Responses	%	Mailout	%	Prop. %
Unsolicited	37	35.2	204	53.7	18.1
Solicited, Contact	57*	54.3	116	30.5	49.1
Solicited, No Contact	11	10.5	60	15.8	18.3
Total	105**	100.0	380	100.0	27.6

* Includes 13 (net) from second mailout

Table 9.1: Responses by Contact–No Contact Groups

9.3 DATA ANALYSIS

9.3.1 Respondent Demographic Data

Questionnaire data were entered into SPSS[®] Version 10.0 for Windows (Norušis 1993). The data were then reviewed for errors and 'cleaned' where necessary (Hair, Anderson, Tatham and Black 1995, Oppenheim 1992, Remenyi, Williams, Money and Swartz 1998). The demographic and control data of the 105 respondents were collected from Section 5 of the questionnaire (Questions 38-43) and administration of questionnaires throughout the mailout procedure.

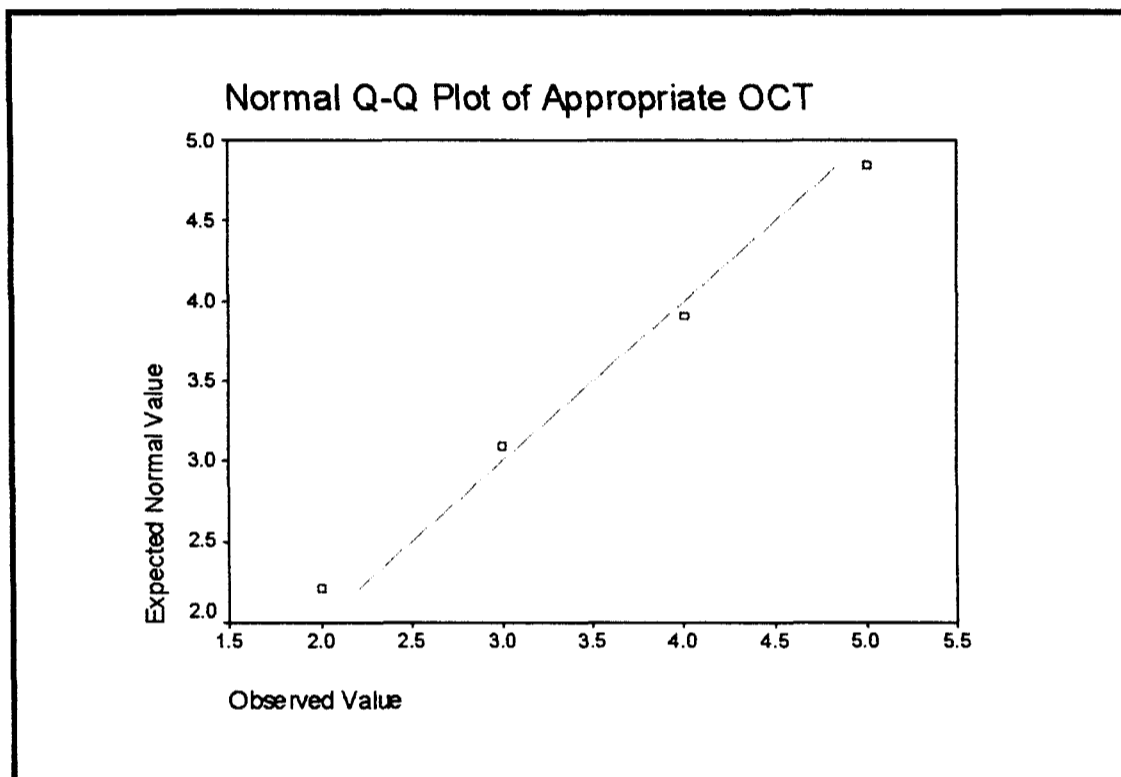


Figure 9.2: Normal Probability Plot

The data were first examined for normality and survey bias. Normal probability plots were generated for the 32 variables related to customer service expectations and perceptions. Figure 9.2 shows the probability plot for one of the variables. Normality is indicated if response plots are clustered around the straight line (Norušis 1993). All normal probability plots were examined and the data were considered normal for statistical analysis, thus the data were not transformed.

As discussed in Chapter Eight 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 last quartile

of respondents contained all of the second mailout respondents as well as initial mailout respondents who responded after the initial mailout due date.

A t-test was then applied to the 16 customer service expectation variables and results are shown in Table 9.2. 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, Flint and Kent 1999, Norušis 1993, Robson 1993).

Variable	1st Quart Mean	σ	2nd Quart Mean	σ	t-test	df	Sig (2-tail)
Price	4.54	1.07	4.42	0.95	0.41	25	0.69
Availability	4.31	1.38	4.62	1.17	-0.90	25	0.38
On-Time Delivery	4.81	0.57	4.85	0.46	-0.25	25	0.80
Easy Ordering	4.35	1.09	4.19	0.94	0.49	25	0.63
Delivery Time	4.00	1.13	3.92	0.94	0.25	25	0.80
Complete Orders	4.77	0.51	4.69	0.55	0.46	25	0.65
Customised Services	4.77	1.32	4.35	1.47	-1.18	25	0.25
Appropriate OCT	4.17	1.61	4.08	1.21	0.21	25	0.84
Consistent OCT	4.12	1.64	3.92	1.08	0.50	25	0.63
Ongoing Information	3.64	1.25	3.92	1.26	-0.73	25	0.47
Accurate Invoices	4.62	0.75	4.62	0.57	0.00	25	1.00
Helpful CSRs	4.23	1.03	4.46	0.65	-1.10	25	0.28
OSD	4.85	0.61	5.00	0.49	-1.00	25	0.33
Action on Complaints	4.73	0.72	4.77	0.71	-0.19	25	0.85
Return Policy	4.31	0.88	4.46	1.03	-0.60	25	0.56
After Sales Support	4.50	1.21	4.65	1.06	-0.52	25	0.61

Table 9.2: Non-Response Bias Test

Absolute t-test values were less than 1.96 at the 5% significance level for all 16 variables. Two-tailed probabilities were significant and ranged from 28% to 100% for the variables. Thus, there were no statistically significant differences in means for the

16 variables and it is inferred that responses from first quartile (early) and last quartile (late) respondents were the same and non-response bias was therefore non-existent. This technique could not however address the issue of social responsibility response bias towards the survey by follow-up respondents.

Data from Questions 38-40 and questionnaire tracking were nominal and non-metric (Hair, Anderson, Tatham and Black 1995). Firms were placed into descriptive categories with respect to the characteristics of industrial sector group, number of employees, number of persons responsible for purchasing supplies, and geographic location within Scotland. Nominal data are the lowest level with respect to measurement and the only meaningful quantitative analysis that can be performed are frequency counts and cross-tabulations (Hair, Anderson, Tatham and Black 1995, Remenyi, Williams, Money and Swartz 1998). Another part of the demographic data (Questions 41-43) were ratio or metric as the numerical responses have absolute and meaningful magnitudes as well as a true zero (Hair, Anderson, Tatham and Black 1995). Ratio data are the highest level with respect to measurement and can be analysed by the full range of statistical techniques (Hair, Anderson, Tatham and Black 1995, Remenyi, Williams, Money and Swartz 1998).

The majority of the 105 respondents were seafood producers (about 63%) with just over 34% consisting of meat producers and only 3% consisting of poultry and game producers. Although seafood producers were the largest percentage group overall, more meat producers responded on a proportional basis (about 38%) than seafood producers (just over 25%). Table 9.3 shows the response pattern from the industry sub-sectors.

Sub-Sector	Responses	%	Mailout	%	Prop. %
Meat	36	34.3	96	25.3	37.5
Poultry and Game	3	2.9	22	5.8	13.6
Seafood	66	62.9	262	68.9	25.1
Total	105	100.0	380	100.0	27.6

Table 9.3: Responses by Industry Sub-Sectors

Respondent firms were asked about their number of employees according to categories for small and medium-sized enterprises established by the European Community (The European Commission 1999). Almost 67% had less than 50 employees and fell within the Community's small to medium enterprise (SME) category. Respondents were asked whether they were the only individual in the firm responsible for purchasing and arranging the delivery of a supplier's products and over 75% were not.

The postal codes of respondents were tabulated for each of the 16 postal code zones in Scotland. The percentages of responses received correspond closely to the percentages of the mailout distribution. The Aberdeen, Inverness and Paisley postal code zones comprised almost 50% of responses. This compares with the industry sector group responses in Table 9.4, as these three zones are very active in seafood production.

Respondents were asked about the number of suppliers they dealt with and the number of deliveries they received per week. The mean number of suppliers was about 70 with a median of 33 and a mode of 50. The mean number of deliveries per week was about 47 with a median and mode of 20. There were 101 respondents who completed the percentage of delivery methods question and mean percentages were 43% for supplier delivery, 18% for their own delivery, and 39% for third-party delivery. These frequencies confirm the importance of the item, delivery and supplier in the recent event to respondents as well as the consistent demographic nature of respondents compared to the sample frame surveyed.

Various cross tabulations were calculated for relationships but were discarded. More than 20% of cells in all cross tabulations calculated contained expected frequencies of less than 5 and any χ^2 tests were therefore statistically meaningless (Robson 1993). This suggests that a larger response set was needed to critically examine such relationships.

9.3.2 Customer Service Expectations and Importance

Respondents were first asked about their expectations of customer service from suppliers as regards the 16 variables. The questionnaire provided the statement 'Our firm expects this customer service feature from our suppliers' and respondents were

asked to select a point on a 5 point Likert scale ranging from strongly disagree as anchor point 1 to strongly agree as anchor point 5. Responses provided a measure of customer expectations from suppliers. No labels were attached to the three intermediate points and respondents were also able to select 'not applicable'. The data were considered interval for analysis purposes as discussed in Chapter Eight.

Respondents were also asked to list any other customer service features that were not in the 16 variables provided in the questionnaire. Twenty-two respondents (21%) did so and there were no significant numbers of features or new variables in the responses. Some of the features were similar to existing variables in the questionnaire. Without the ability to probe respondents it is not known whether respondents were suggesting new variables or were confused over meaning of the corresponding variable in the instrument.

No hypotheses had been developed regarding importance. Most of the 16 customer service variables appeared important as visual exploration of the data frequencies revealed numerous responses of '4's and '5's on the Likert scale. Further, ranking the variables based on statistical means was an intuitive discriminatory measure of importance. Variables whose means were in the upper quartile, i.e., their means were greater than 3.75, might be considered the most important.

Respondents were also asked to rank the five most important variables to their firm from the 16 provided in the survey. Table 9.4 shows the rankings from the mean scores of the Likert responses, weighted respondent importance scores, and an overall average of the two rankings. The weighting was based on a rank frequency of 1 being multiplied by 5, a rank frequency of 2 being multiplied by 4, and so on.

Four variables scored 190 or greater in weighted average scoring and had means greater than 3.75. These variables were, in overall rank order, order on-time delivery on the date promised, products arriving undamaged and according to specification (OSD), complete and accurate orders, and competitive price quotes including discounts and payment terms. Their means ranking in Table 9.4 was 2, 1, 4, and 7 respectively. Action

on complaints, whilst scoring only 78 in weighted average scoring, was 3 in means ranking and it is ranked fifth overall. These five variables are the most important logistics customer service variables for this sample.

Variable	Means Ranking (Mean)	Importance Ranking (Weighted Score)	Overall Ranking (Average)
On-Time Delivery	2 (4.67)	1 (286)	1
OSD	1 (4.81)	3 (215)	2
Complete Orders	4 (4.59)	4 (190)	3
Price	7 (4.28)	2 (259)	4
Action on Complaints	3 (4.61)	7 (78)	5
Accurate Invoices	5 (4.57)	6 (86)	6
Helpful CSRs	6 (4.29)	9 (41)	7
Availability	10 (4.12)	5 (89)	7
After Sales Support	9 (4.13)	8 (47)	9
Return Policy	8 (4.16)	12 (14)	10
Easy Ordering	11 (4.09)	11 (23)	11
Delivery Time	12 (3.76)	10 (32)	11
Consistent OCT	13 (3.69)	12 (14)	13
Customised Services	15 (3.59)	14 (8)	14
Appropriate OCT	14 (3.61)	15 (7)	14
Ongoing Information	16 (3.44)	16 (6)	16

Table 9.4: Ranking of Customer Service Variables

Four variables had means less than 3.75 and scored less than 20 in weighted average scoring: customised services, appropriate order cycle times, consistent order cycle times, and ongoing information regarding an order. These four variables were ranked 13 through 16 overall respectively. These variables are the least important logistics customer service variables for this sample. These findings are consistent with discussions in Chapters One and Eight regarding smaller food processors being driven by transactional and cost considerations.

9.3.3 Customer Service Perceptions and Event Satisfaction

Respondents were then asked to consider the most recent delivery they received from a supplier and again select a point on a similar 5 point Likert scale according to the statement 'Our firm received this customer service feature from the supplier'. Responses provided a measure of perceptions regarding an actual service experience.

Respondents were also asked about the nature of the delivery to examine the context behind responses. The types of deliveries received were primarily raw materials (55%) and packaging materials (20%) used in production processes. Deliveries were typical of those provided by the supplier (95%) and almost 60% of respondents received deliveries from the supplier more frequently than once a week. Almost 50% of respondents rated the supplier as very important to them.

Lastly, respondents were asked whether they were 'satisfied' or 'dissatisfied' overall that customer service needs were met by the actual delivery. There were 86 (82%) respondents who indicated they were satisfied, 17 (16%) respondents who indicated they were dissatisfied, and two non-respondents to the question (2%). This response provided a measure of a respondent's customer satisfaction for the event.

The means and standard deviations from respondents' expectations and perceptions were calculated for each variable. A paired group t-test of expectation and perceptions means was calculated for each variable at the 5% significance level and variable means were summed for both expectations and perceptions. This analysis is similar to the procedure for the SERVQUAL instrument developed by PZB (1988). There were no significant differences from the total sample amongst demographic data for both satisfied and dissatisfied respondents.

The customer perception sum of means of 69.6 marginally exceeded the customer expectation sum of means of 66.7 for respondents who indicated they were satisfied, as shown in Table 9.5. The +2.9 difference indicates perceptions exceeded expectations, and respondents were satisfied in accordance with the service quality model (Mentzer, Gomes and Krapfel 1989, PZB 1985).

Seven variables had absolute t-test values greater than 1.96 that indicated significant differences between means. Four variables had positive t-test values: availability, on-time delivery, complete and accurate orders, and orders arriving undamaged and according to specification (OSD). The positive sign indicates that expectations exceeded perceptions for these variables and respondents were dissatisfied according to the service quality model for these four variables. Three variables had negative t-test values: appropriate order cycle time (OCT), consistent OCT and return policy. The negative sign indicates perceptions exceeded expectations for these variables and respondents were satisfied according to the service quality model.

Variable	Expect. Mean	σ	Percept. Mean	σ	t-test	Sig (2 tail)
Price	4.29	.823	4.29	.93	-0.47	0.64
Availability	4.15	.92	3.90	.92	3.22	0.00
On-Time Delivery	4.73	.69	4.28	.94	4.43	0.00
Easy Ordering	4.10	.87	4.17	.84	-0.61	0.55
Delivery Time	3.76	1.01	3.78	1.07	0.29	0.77
Complete Orders	4.59	.74	4.35	.88	3.34	0.00
Customised Services	3.61	.94	3.58	1.08	0.70	0.48
Appropriate OCT	3.60	.95	4.48	1.56	-2.70	0.01
Consistent OCT	3.63	1.00	4.54	1.46	-3.11	0.00
Ongoing Information	3.46	1.00	4.05	1.71	-1.83	0.07
Accurate Invoices	4.55	.78	4.58	.90	-0.32	0.75
Helpful CSRs	4.31	.83	4.33	1.20	0.00	1.00
OSD	4.81	.59	4.42	.83	4.63	0.00
Action on Complaints	4.66	.59	5.26	4.44	-1.24	0.22
Return Policy	4.19	.78	4.90	1.93	-3.15	0.00
After Sales Support	4.27	.85	4.68	1.59	-1.22	0.23
Sum of Means	66.71		69.59			

Table 9.5: Customer Service Expectations and Perceptions of Satisfied Customers

The customer perception sum of means of 55.8 was less than the customer expectation sum of means of 66.3 for respondents who indicated they were dissatisfied, as shown in Table 9.6. The -10.5 difference indicates expectations exceeded perceptions and

respondents were dissatisfied in accordance with the service quality model (Mentzer, Gomes and Krapfel 1989, PZB 1985).

Variable	Expect. Mean	σ	Percept. Mean	σ	t-test	Sig (2 tail)
Price	4.19	1.22	3.40	1.18	2.96	0.01
Availability	4.00	1.27	2.67	1.40	2.94	0.01
On-Time Delivery	4.47	1.07	2.65	1.41	4.98	0.00
Easy Ordering	4.12	1.05	3.82	1.02	0.89	0.39
Delivery Time	3.88	.99	3.19	1.33	1.66	0.12
Complete Orders	4.65	.70	3.53	1.23	3.27	0.01
Customised Services	3.57	1.09	3.46	1.70	0.36	0.73
Appropriate OCT	3.80	1.01	3.82	2.10	0.64	0.53
Consistent OCT	4.13	.83	4.18	2.04	0.57	0.58
Ongoing Information	3.53	1.33	2.71	1.57	1.91	0.07
Accurate Invoices	4.65	.49	4.24	.90	1.69	0.11
Helpful CSRs	4.35	.61	3.94	.90	1.51	0.15
OSD	4.82	.39	3.18	1.47	4.20	0.00
Action on Complaints	4.47	.80	3.18	1.07	3.48	0.00
Return Policy	4.12	.86	4.06	2.14	0.09	0.93
After Sales Support	3.59	1.37	3.77	1.64	-0.47	0.65
Sum of Means	66.34		55.80			

Table 9.6: Customer Service Expectations and Perceptions of Dissatisfied Customers

Six variables had positive t-test values greater than 1.96 that indicated significant differences between means: price, availability, on-time delivery, complete and accurate orders, OSD, and action on complaints. Since all six variables had positive t-test values, expectations exceeded perceptions for these variables and respondents were dissatisfied according to the service quality model.

A comparison of t-test values between satisfied and dissatisfied respondents is shown in Table 9.7. Nine variables out of 16 across the two groups had significant t-test values at the 5% level. Fives variables were the five most important ranked variables. Four variables had significant values in terms of magnitude and direction amongst both groups: availability, on-time delivery, complete orders and OSD. These findings

indicate all respondents were dissatisfied with their supplier's performance regarding these variables. Three variables, appropriate OCT, consistent OCT and return policy, were opposite in direction but were significant only for satisfied respondents. There was a non-significant difference for dissatisfied respondents. Thus, these variables may be key discriminating variables of satisfaction between satisfied and dissatisfied respondents.

Variable	Satisfied Respondents	Dissatisfied Respondents	Direction	Importance Ranking
Availability	3.22	2.94	Same	7
On-Time Delivery	4.43	4.98	Same	1
Complete Orders	3.34	3.27	Same	3
OSD	4.63	4.20	Same	2
Appropriate OCT	-2.70	0.64*	Opposite	14
Return Policy	-3.15	0.09*	Opposite	10
Consistent OCT	-3.11	0.57*	Opposite	13
Price	-0.47*	2.96	Opposite	4
Action on Complaints	-1.24*	3.48	Opposite	5

* Not significant

Table 9.7: t-test Comparison of Satisfied and Dissatisfied Respondents

Two variables, price and action on complaints, were opposite in direction but were significant only for dissatisfied respondents. There was a non-significant difference for satisfied respondents. Thus, price and action on complaints may be key discriminating variables of dissatisfaction between satisfied and dissatisfied respondents.

In summary, satisfied respondents marginally reported perceptions exceeded expectations for the important ranked variables of price and action on complaints. However, they reported expectations were significantly less than perceptions for the other three most important variables. Dissatisfied respondents reported expectations were less than perceptions for all five most important variables.

9.3.4 Exploratory Factor Analysis and Reliability Tests

EFA was used to assess whether any of the 16 variables were items underlying constructs of customer service. Factor analysis is a data reduction technique for analysing the structure of inter-item or inter-variable correlations among large numbers of variables by defining a set of common underlying dimensions or factors (Child 1990, Hair, Anderson, Tatham and Black 1995, Stewart 1981). EFA has three main purposes: the identification of groups of variables that relate to each other, the development of model parsimony by simplifying the number of variables to these new groups, and the construction of indices which explain the bulk of variation in the data (*ibid.*). It is also useful for assessing the reliability of multiple-item measures (Carmines and Zeller 1979, Churchill 1979).

Factor analysis need not be only exploratory; CFA can be used for theory building and hypothesis testing (Child 1990, Hair, Anderson, Tatham and Black 1995, Stewart 1981). This technique is utilised in the development of structural equation models and will be introduced in Chapter Ten as regards the second stage of the Churchill et al. framework.

Hair, Anderson, Tatham and Black (1995) provided steps for the use of EFA. The first step is to check whether this technique is appropriate for the data under consideration. There were 75 cases considered as the other 30 cases had variables that were reported 'not applicable', non-responses or missing data. This number of cases represented almost five cases per variables but as noted in Chapter Eight is at the minimum level.

The Pearson correlation matrix for the 16 customer service variables shown in Table 9.8 yielded sufficient level and depth of inter-item correlation, i.e., substantial numbers of correlations greater than .30 (Child 1990, Hair, Anderson, Tatham and Black 1995). Coefficient alpha for all variables in the matrix was .88, which is considered highly reliable (Carmines and Zeller 1979, Dunn, Seaker and Waller 1994, Hair, Anderson, Tatham and Black 1995, Nunnally and Bernstein 1994). ANOVA yielded an F value of 30.57 at $p < .01$, which indicates the means across all variables are not equal (Hair, Anderson, Tatham and Black 1995).

Price	1.00																
Availability	.52	1.00															
On-Time Delivery	.24	.33	1.00														
Easy Ordering	.37	.48	.50	1.00													
Delivery Time	-.17	.13	.33	.36	1.00												
Complete Orders	.31	.28	.63	.50	.16	1.00											
Customised Services	.07	.21	.18	.39	.37	.30	1.00										
Appropriate OCT	.14	.18	.32	.45	.39	.37	.71	1.00									
Consistent OCT	.26	.28	.36	.50	.33	.51	.54	.83	1.00								
Ongoing Information	.07	.22	.37	.41	.40	.21	.35	.52	.45	1.00							
Accurate Invoices	.11	.07	.13	.35	.05	.29	-.05	.01	.08	.19	1.00						
Helpful CSRs	.39	.46	.34	.48	-.03	.36	.13	.21	.24	.31	.26	1.00					
OSD	.39	.37	.45	.34	.10	.48	.29	.43	.45	.25	.15	.14	1.00				
Action on Complaints	.29	.30	.62	.51	.24	.50	.18	.23	.29	.43	.35	.42	.37	1.00			
Return Policy	.26	.28	.34	.54	.12	.47	.38	.42	.46	.53	.39	.46	.26	.48	1.00		
After Sales Support	.35	.42	.31	.61	.05	.49	.39	.34	.36	.33	.23	.41	.34	.42	.60	1.00	

Table 9.8: Pearson Correlation Matrix for Customer Service Variables

Two other tests were also applied. The Bartlett test of sphericity provides a χ^2 statistical probability that the correlation matrix has significant correlations among the variables. The χ^2 for the 75 cases was 601 with 120 degrees of freedom and is significant. The Kaiser Meyer Olkin (KMO) measure of sampling adequacy provides an index from zero to one, reaching one when each variable is perfectly predicted without error by the other variables. The KMO index for this data was .80 and is considered 'meritorious' (Child 1990, Hair, Anderson, Tatham and Black 1995, Stewart 1981). Based on the analysis of the Pearson correlation matrix and these two tests, factor analysis was considered appropriate for the 75 available cases.

The second step is to extract factors from the data and there are two methods to do so. One method is common factor analysis where “some account is taken of the presence of unique variance among variables” (Child 1990 p.30). However, CFA has two problems associated with it. One is factor indeterminacy, “which means that for any individual respondent several different factor scores can be calculated” and thus “there is no unique solution” (Hair, Anderson, Tatham and Black 1995 p.376). The other involves the calculation of estimated communalities.

Communality (h^2) is the variance shared in common with all other variables included in the analysis (Child 1990, Hair, Anderson, Tatham and Black 1995). Communalities calculated with common factor analysis are “not always estimable or may be invalid” (Hair, Anderson, Tatham and Black 1995 p.376). The complications of common factor analysis have “contributed to the widespread use” (ibid.) of the second method: principal component analysis (PCA) where “the intrusion of unique variance is ignored” (Child 1990 p.30).

PCA is appropriate to use when the objective is to summarise most of the original variance in a minimum or parsimonious number of factors for predictive purposes (Hair, Anderson, Tatham and Black 1995). In PCA unities or 1.00 are “inserted in the diagonal of the correlation matrix” as shown in Table 9.8 (Hair, Anderson, Tatham and Black 1995 p.376). Thus, in PCA factors are derived from total variance whereas in common factor analysis the communalities are inserted in the diagonal representing only the common variance. The method selected for the pilot study was PCA due to inherent problems with common factor analysis and the objective to analyse all variance associated with the 16 variables to enable purification of the measures.

The number of factors to extract is the third step. Two methods are useful for this process (Child 1990, Hair, Anderson, Tatham and Black 1995). The first examines the latent roots or eigenvalues of factors. Factors with eigenvalues less than 1.0 are considered insignificant and should be disregarded. The second method considers a graphical scree plot of the eigenvalue for each factor. When the slope of the line on the graph becomes horizontal, representing the ‘scree’ at the bottom of a mountain, it

delineates a cut-off point for the appropriate number of factors. The third considers the percentage amount of variance that is explained by the factors. Figure 9.3 shows a scree plot for the 16 variables. The slope of the line becomes linear and horizontal about the fourth factor and four factors have eigenvalues greater than 1.0. Thus four factors were initially chosen for review.

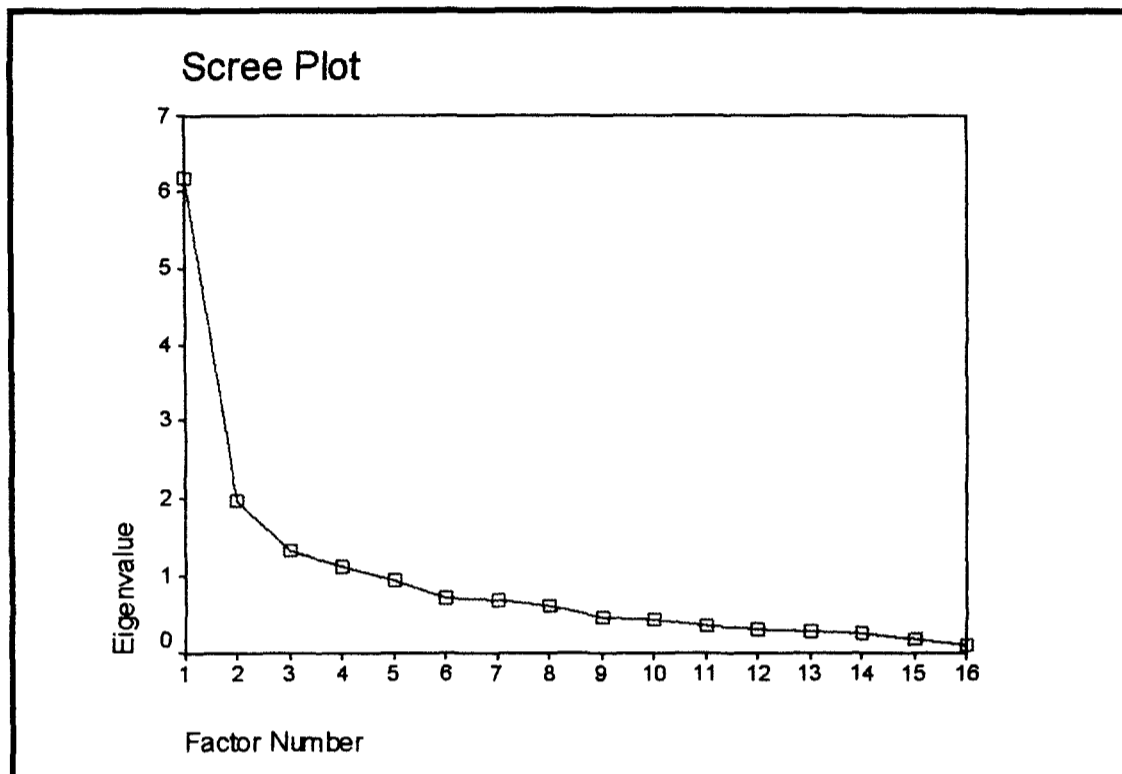


Figure 9.3: Scree Plot

The fourth step involves the derivation of a final factor solution. An initial unrotated factor solution is computed to confirm variance explained and eigenvalues, however an unrotated solution does not provide “the most adequate interpretation of the variables under examination” (Hair, Anderson, Tatham and Black 1995 p.380). The initial solution revealed four factors with eigenvalues greater than 1.0 that explained two-thirds (67%) of the variance. However, factor 1 had 13 of the 16 variables and explained almost 40% of the variance but was a meaningless factor that suggested no important groups of variables of significance.

A factor solution is ‘rotated’ mathematically until the reference axes of variance reached another position that better explained the factors and the factor loadings, i.e. correlations of each variable with the factor. Orthogonal rotation maintains the axes at 90 degrees and thus each variable’s loading on each factor is independent of its loading

on another factor. Oblique rotation is not orthogonal and factors therefore do not remain completely unrelated as independence is lost (Hair, Anderson, Tatham and Black 1995).

The analysis of orthogonal factors and the maintenance of independence are important for the pilot study to ensure robust findings and useful information underlying constructs of customer service, thus orthogonal rotation was selected. Four factors were found using principal component extraction and VARIMAX orthogonal rotation and are shown in Table 9.9 at a .45 loading level. The four factors explained 66.6% of the variance.

Factor 1 contains four variables: appropriate OCT, consistent OCT, customised services and ongoing information. These four variables were the least most important variables shown in Table 9.4. Factor 2 contains five variables: return policy, accurate invoices, after sales support, helpful CSRs and easy ordering. Factor 3 contains five variables: on-time delivery, action on complaints, complete orders, OSD and delivery time. Factor 4 contains two variables: price and availability. The five most important variables of on-time delivery, OSD, complete orders, price and action on complaints loaded onto the third and fourth most significant factors. All factors had initial eigenvalues greater than 1.0 and comprise all 16 variables. The four rotated factors explain about 67% of total variance and “in the social sciences... it is not uncommon... to consider a solution that accounts for 60% of total variance as a satisfactory solution” (Hair, Anderson, Tatham and Black 1995 p.378).

The factor loadings are correlation coefficients for each variable and the factor, indicating the weight assigned to the factor. Mathematically, squaring the factor loading yields the amount of a variable’s variance accounted for by the factor (Child 1990, Hair, Anderson, Tatham and Black 1995). For example, the variable easy ordering in Factor 2 has a loading of .53 (Table 9.8) and Factor 2 therefore accounts for 28.1%, i.e. $.53^2$ of the variance for easy ordering. Loadings greater than .30 are considered to meet a minimum level, .40 are more important whilst .50 are considered significant as they explain at least 25% of a variable’s variance by the factor (Hair, Anderson, Tatham and Black 1995). The significance of loadings pertaining to factors may also be dependent

on sample size and degrees of freedom. Hair, Anderson, Tatham and Black (1995) provided guidelines that suggest factor loadings of .60 are significant at the 5% level with a sample size of 85, whilst loadings of .65 are significant with a sample size of 70.

Variable (Importance Rank)	Factor 1	Factor 2	Factor 3	Factor 4	h²
Appropriate OCT (14)	.90				.86
Customised Services (14)	.84				.72
Consistent OCT (13)	.78				.74
Ongoing Information (16)	.52				.57
Return Policy (10)		.73			.74
Accurate Invoices (6)		.71			.56
Helpful CSRs (7)		.60			.57
After Sales Support (9)		.54			.62
Easy Ordering (11)		.53			.66
On-Time Delivery (1)			.85		.80
Action on Complaints (5)			.65		.70
Complete Orders (3)			.60		.61
OSD (2)			.53		.61
Delivery Time (11)			.49		.64
Price (4)				.83	.71
Availability (7)				.66	.54
Initial Eigenvalues	6.19	1.99	1.35	1.14	
Variance Explained	38.7%	12.4%	8.4%	7.1%	
Cumulative Variance	38.7%	51.1%	59.5%	66.6%	
Coefficient Alpha	.84	.78	.70	.59*	

* inter-item correlation

Table 9.9: Principal Component Rotated Factor Solution

Child (1990) provided guidelines for PCA solutions based on the Burt-Banks formula. For 20 variables and four factors, factor loadings for 100 degree of freedom should be at least .21 at the 5% level and .28 at the 1% level. All 16 variables loaded onto factors at the .45 level and whilst this value does not meet the sample size guidelines the sample can be considered significant at the 1% level according to the Burt-Banks formula (Child 1990) and based on 120 degrees of freedom. Community (h²) values resultant after rotation are also included in Table 9.9 for each variable and all are .54 or higher,

which indicates the unique variance attributed to each variable is .46 or less (Child 1990).

The final analysis in the first stage in the Churchill et al. framework is to assess the internal consistency or reliability of the variables and four factors using coefficient alpha. As discussed in Chapter Eight, internal consistency refers to the degree to which indicator variables are internally consistent and measure the same unobserved constructs. Coefficient alpha is calculated using inter-item correlations contained in the Pearson correlation matrix. Values will thus be between the range of zero and 1.0. Coefficient alpha scores exceeding a threshold of .70 are considered to be reliable (Carmines and Zeller 1979, Dunn, Seaker and Waller 1994, Nunnally and Bernstein 1994, Hair, Anderson, Tatham and Black 1995). Coefficient alpha scores for the first three factors are also presented in Table 9.9. Scores for factors 1, 2 and 3 were .84, .78 and .70 respectively. Since they greatly meet or exceed .70 they were considered internally reliable. Thus, factors 1, 2 and 3 are considered to underlie constructs of logistics customer service for this sample. Factor 4 does not have an alpha score. Coefficient alpha's purpose is to compare each item or variable to the remaining items as a group and it is therefore meaningless for two item factors (Carmines and Zeller 1979, Hair, Anderson, Tatham and Black 1995, Mentzer, Flint and Kent 1999). The inter-item correlation of .59 between price and availability is reported in Table 9.9.

9.4 DISCUSSION

9.4.1 Important Customer Service Variables (RQ₁)

The most important variables of customer service that respondents expected were on-time delivery, OSD, complete and accurate orders, price and action on complaints. These five variables ranked highly in terms of weighted importance and means compared to the other 11 variables. These variables are also primarily related to the delivery of supplies and are thus considered transaction-oriented, i.e. related to an exchange event.

Conversely, the least important variables of customer service that respondents expected were consistent OCT, appropriate OCT, customised services and ongoing information. These variables are temporal or longitudinal in nature and are thus considered relationship-oriented, i.e. related to an ongoing relationship between customer and supplier. Other transaction-oriented variables such as accurate invoices, availability and easy ordering, and other relationship-oriented variables such as helpful CSRs, after sales support and return policy were ranked between the nine most and least important variables. No clear discrimination was found between these transaction-oriented and relationship-oriented variables. This finding suggests firms in these industry sub-sectors may be very conscious and concerned about customer service variables surrounding a transaction or event. The various empirical studies in logistics examined in Chapter Seven did not exhibit any patterns related to the most important or least important variables.

The studies based around constructs of availability, timeliness and quality and Mentzer, Gomes and Krapfel's model (1989), which are the most recent in the literature do not consider price an important variable of logistics service quality. Similarly, the original service quality model and SERVQUAL measures of PZB (1985, 1988) do not consider price an important variable of service quality in a marketing context. PZB (1994) recognised this shortcoming in their work in response to criticism from Cronin and Taylor (1992) and Teas (1993), among many authors as detailed in Smith (1995) and Buttle (1996).

PZB proposed that both service quality and customer service can be "examined meaningfully from both transaction-specific as well as global perspectives" such that "transaction-specific could be argued to be a predictor of perceived long-term relationship quality" (1994 p.121). A predictive transaction-specific satisfaction and service quality model would include customer impressions about transaction satisfaction, service quality, product quality and price. Summated customer responses over time would provide a global indicator of satisfaction, or relationship quality. PZB provided a preliminary model for this proposal, introduced in Chapter Six and shown in Figure 9.4, however it is has not been empirically tested. This model provides a useful

approach to considering different types of customer service variables as well as price, and will be incorporated into the main study and discussed further in Chapter Ten.

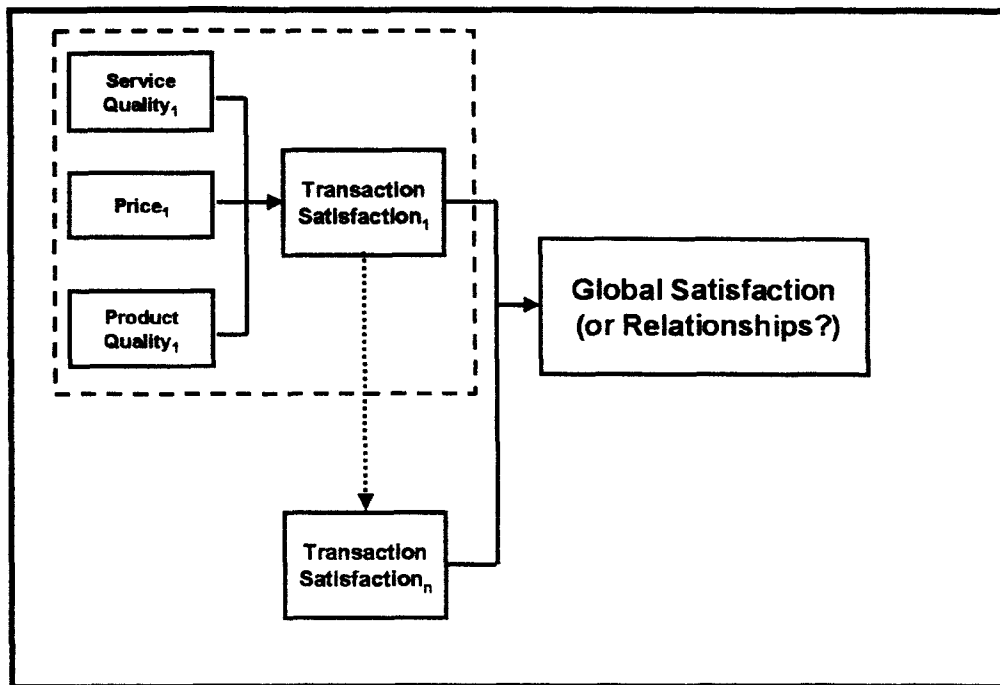


Figure 9.4: Proposed Transaction-Specific Satisfaction and Service Quality Model

(Source: Parasuraman, Zeithaml and Berry 1994 p.122)

9.4.2 Customer Satisfaction (RQ₂)

Overall customer satisfaction from an actual logistics delivery service event was determined by respondent choice and was compared to a summated calculation of the difference between perceptions and expectations. Customer satisfaction was marginally achieved for satisfied respondents but not achieved for dissatisfied respondents. These findings support the postulate of PZB's service quality model (1985) that differences in expectations and perceptions can be used as a measure of satisfaction and service quality.

Price and action on complaints, two of the five most important variables, were key discriminating variables of customer satisfaction between satisfied and dissatisfied respondents. The majority of respondents were SMEs and all were intermediaries in the food supply chain. Their supplies for processing may be considered commodities and thus price may be a key dissatisfaction factor for this sample as discussed in Chapter Three. This finding suggests these industrial sub-sectors may be price-sensitive. Further, firms processing perishable commodities for resale may be desirous of

immediate restitution if there is a problem with the supply's quality or the event delivery. This finding is valid in an industrial sector with perishable commodities and products. However, due to the small number of dissatisfied respondents in this sample all the findings should be viewed with caution. The marginal differences between the summated expectation and perception scales supports Cronin and Taylor's (1992, 1994) call for a performance-based measure, or SERVPERF, as discussed in Chapter Four.

Smith (1995, 1999) recited various studies that highlighted a number of methodological problems specifying a construct by the outcome of a comparative process, for example analysis of difference scores and data attenuation effects. However Smith also found support for Oliver's suggestion that "evaluations of satisfaction must be based on experience" as regards service quality (1999 p.110), thus consideration of an event continues to be appropriate.

Cronin and Taylor proposed their concise, performance-only SERVPERF scale is a "more appropriate basis for measuring service quality than SERVQUAL, weighted SERVQUAL, or weighted SERVPERF" (1992 p.59). However they also noted the "use of importance weights and use of performance-based measures are arguably more theoretically sound approaches" in terms of dimensionality, reliability and validity (1992 p.61). Aggregating a performance-only SERVPERF measure across respondents is problematic as it ignores the importance of a variable to a respondent. For example, it is "possible that customers who think an attribute is important also perceive it to be poorly supplied while those who think the same attribute is unimportant may perceive it to be supplied very well" (Ennew, Reed and Binks 1993 p.61). Thus, due to its better psychometric characteristics and a requirement for understanding the importance of customer service variables to respondents, a weighted SERVPERF measure related to a specific event will be incorporated in the main study and discussed further in Chapter Ten.

9.4.3 Constructs of Logistics Customer Service (RQ₃)

EFA yielded four factors that were statistically sound and reliable, but diverse regarding important variables of customer service loading on stronger factors. The five important

customer service variables loaded onto the third and fourth factors. Conversely, the four least important customer service variables loaded onto the first or strongest factor. The latter variables tend to be relationship-oriented. This finding suggests either a dichotomy or duality regarding transaction and relationships amongst respondents. Respondents might also operate at either two different or hierarchical levels regarding supplier customer service, à la Rutner and Langley's MEHVM. Recent studies of service quality dimensions have proposed them as multilevel as well as multidimensional (Dabholkar, Shepherd and Thorpe 2000, Brady and Cronin 2001). Alternatively, respondents might focus on transaction factors during independent events but maintain a sense of an overall relationship on an ongoing basis. In this situation relationships might be a mediating, causal or moderating factor.

The four factors in Table 9.9 were assigned "a name or label that accurately reflects the variables loading on that factor" to try and ascribe "some meaning to the pattern of factor loadings" (Hair, Anderson, Tatham and Black 1995 p.387). Factor 1 is termed order cycle activities, Factor 2 is termed after-sales activities, Factor 3 is termed delivery activities, and Factor 4 is termed pre-order activities. These names or labels represent constructs of logistics customer service particular to the industrial sub-sectors investigated in Scotland. These constructs appear to represent ordering and purchasing processes, similar to the various constructs of logistics service quality developed by Mentzer, Flint and Kent (1999) and Mentzer, Flint and Hult (2001). This finding may have some relevance regarding these constructs in an industrial sector, as opposed to the non-profit government context examined by the two foregoing sets of authors.

However, these constructs might only be first-order constructs or attributes according to Rutner and Langley's MEHVM (2001), whilst second-order constructs or consequences may relate to transactions and relationships. Further, six variables that make up the total battery of 16 items examined, such as price and availability comprising Factor 4, are not represented in the constructs developed by Mentzer, Flint and Kent (1999) and Mentzer, Flint and Hult (2001). Thus, the nature of these constructs involving all 16 variables and their relevance to potentially higher-order constructs of transactions and relationships will be incorporated in the main study and further discussed in Chapter Ten.

9.4.4 Issues Pertaining to Methodology and Rigour

Telephone pre-notification of respondents more than doubled the response rate of unsolicited mailouts from 18% to 38%. This finding supports existing literature on the increase of response rates using different notification techniques and professional survey packages (Diamantopoulos and Schlegelmilch 1996, Earp and Hunter 1999, Schlegelmilch and Diamantopoulos 1991, Wunder and Wynn 1988). However, the group response rates and patterns of response suggest that postal survey respondents may either respond quickly or not at all, notwithstanding follow-up efforts. The response rate from follow-up efforts of about 20% was slightly better than the unsolicited response rate of 18%.

Flynn and Percy (2001) argued that studies utilising the Churchill et al. framework require an appropriate sample response for testing internal consistency and scale purification, echoing already-mentioned concerns (Sterling and Lambert 1987). The first stage of the Churchill et al. framework includes the 'purification' or reduction of the variables to ensure model parsimony (Churchill 1979, Dunn, Seaker and Waller 1994, Hair, Anderson, Tatham and Black 1995). Purification is based on eliminating items that do not highly load onto factors using exploratory factor analysis, or do not exhibit internal consistency or reliability generally or in factors using coefficient alpha.

Churchill suggested performing coefficient alpha tests before EFA to reduce the "tendency to produce many more dimensions than can be conceptually identified... partly due to 'garbage items' which do not have the common core but which do produce additional dimensions in the factor analysis" (1979 p.69). Flynn and Percy agreed with Churchill, but conversely argued that to do so "ignores the fact that while a high alpha cannot be obtained unless the scale battery is unidimensional it does not prove that the underlying construct is unidimensional, and should not be used on a potentially multidimensional set of items" (2001 p.414). They argued the indiscriminate use of coefficient alpha might "whitewash a complex factor structure" and lead to a conceptually important factor being "dropped item by item for failure to contribute to alpha" (ibid.). The alpha calculations for the pilot study in the both the Pearson

correlation matrix and three of the four factors derived were all 0.70 or above, which is acceptable, and thus did not lead to the elimination of any items.

Smith agreed with Flynn and Percy about the elimination of important items or factors and suggested researchers should examine “whether any other key attributes have been omitted from the scale” (1999 p.114). Respondents to the pilot study did not identify any other significant items of customer service, thus the 16 proposed variables are considered appropriate and the variables of importance to these sub-sectors. Smith also noted high alpha values in both total and factor scales are themselves problematic and may not necessarily be evidence of any underlying factor structure, i.e. a “high alpha value for the total scale may indicate the absence of a dimensional structure” (1999 p.113). However, she cited other work by Churchill highlighting “that a greater number of items can be expected to result in higher alpha values”, and that researchers must constantly “assess the nature of scale items” compared to a priori theoretical constructs (ibid.). The 16 variables were generated from an extensive study of extant literature and empirical studies, thus the domain of the constructs is considered appropriate for these sub-sectors.

In summary, despite the rigour undertaken in the research design two methodological issues arose from the pilot study. First, would other data collection techniques have helped understanding of the phenomena under investigation, particularly as regards the transaction-relationship dichotomy and variables of importance? Suggestions to address this first issue include using other survey instruments, such as personal interviews, to provide triangulation of the phenomena, mitigate social desirability response bias and confirm the findings from the questionnaire survey (Remenyi, Williams, Money and Swartz 1998, Robson 1993). Follow-up personal interviews with pilot study respondents were undertaken and are further discussed in the next section.

Second, would a larger sample and/or response have led to more robust and substantial data analysis to confirm statistical rigour of the various analytical techniques? Suggestions to address this second issue include using a larger sample frame for the second stage (Hair, Anderson, Tatham and Black 1995, Nunnally and Bernstein 1994)

and pre-notifying the sample frame to increase the gross number responses as discussed above. A larger sample frame and pre-notification could both be used in conjunction to maximise responses, however time and budget constraints pertaining to this thesis preclude the latter alternative. A larger sample frame was developed for the main study and is discussed further in Chapter Ten.

9.4.5 Post-Pilot Study Considerations

The pilot study provided findings and answers for the three research questions, as outlined above, and was therefore useful as exploratory research for, and justification of, the first stage of the Churchill et al. framework. The second stage in the Churchill et al. framework is to test any purified or reduced number of measures in a larger empirical study and assess all factors of validity. The second stage, in following-up this pilot study, will specify new or amended measures, purify or reduce the number of measures as required via confirmatory factor analysis and structural equation modelling, and undertake a second empirical study. Analysis techniques for the second empirical study will include confirmatory factor analysis or structural equation modelling.

New issues arose as a result of the pilot study that require amendments to the research design and incorporation in the main study. However, their inclusion in the second stage is not problematic, as they do not impair the existing research design. Such modifications are also consistent with Churchill's suggestions that it would "probably want to include items with slightly different shades of meaning because the original list will be refined to produce the final measure" (1979 p.68). Moreover, Churchill recommended examining refined measures with new or additional data from a "new sample of subjects... to rule out the possibility that the previous findings are due to chance" (1979 p.70). Flynn and Percy (2001) agreed that this procedure in the second stage allows for developing a scale with potential for good psychometric properties. However, they argued previous studies have performed insufficient replications, particularly the "one-shot studies" that cited Churchill but "obviously did not use his entire method" (2001 p.413). Consequently, Flynn and Percy reinforced Churchill's recommendation "for more than one study to develop a scale" and suggested it "takes two studies to begin to validate a scale" (2001 p.419).

The issue of customer loyalty, purchase intentions, repeat purchases and profitability, resulting from customer satisfaction and ongoing relationships, has been the subject of much research and discussion in the literature. Although not undertaken in the pilot study, the main study will also consider the impact of logistics customer service and satisfaction and relationships on a firm's loyalty and future intentions as a result of the emergence of the transactions versus relationships dichotomy or duality discussed in section 9.3. The emergent issue of transactions versus relationships has not been researched extensively in logistics, particularly at the supplier-customer interface. The main study will consider the significance of relationships in logistics, attempt to determine whether customers act at different levels when evaluating suppliers from a transactional or relational perspective, and how transactional versus relational issues differ across the sample being investigated.

9.4.6 Post-Pilot Study Interviews

As noted in section 9.4.4 personal interviews were undertaken as a post-pilot study follow-up to confirm the findings of the pilot study and further investigate the emergent issue of transactions versus relationships. The 68 respondents from the solicited, contact and solicited, no contact group were used as the census to interview due to their willingness to participate in the pilot study. A random sample of 11 firms was selected, again using www.randomizer.org, and respondents were telephoned to solicit participation. This number represents just over 15% of the census and allowed for an appropriate number of interviews as well as potential respondent drop-out (Remenyi, Williams, Money and Swartz 1998, Robson 1993).

No contact was ever made with respondents in two firms, four firms declined to participate due to holidays and other time constraints, and five firms agreed to an interview. Two firms cancelled their interviews owing to busy operations, thus three firms were interviewed. This number of interviews is considered satisfactory for the exploratory nature of investigating the issues arising from the pilot study. Further, the interviews permitted the use of multiple research methods and thus provided research triangulation. Triangulation is "a method of finding out where something is by getting a

fix on it from two or more places” (Robson 1993 p.290). It thus enhances research validity by drawing upon “multiple-evidence collection methods” and using “multiple informants and cases in order to demonstrate... a ‘fit’ between theory and reality” (Remenyi, Williams, Money and Swartz 1998 p.115).

Firm A is a Glasgow food manufacturer and processor of ready-made savoury snacks and meals for resale to retailers, and their operations manager ‘Sally’ participated in the interview. Firm B is an Edinburgh beef, lamb and pork processor and wholesaler, and their sales manager ‘Tim’ participated. Firm C is a gammon and bacon processor located near Glasgow supplying to wholesalers and retailers, and their export sales manager ‘Jack’ participated.

All interviews were conducted using a semi-structured interview schedule shown in Appendix Seven. A semi-structured interview has a set of questions determined in advance. The interviewee is interviewed for a short time, e.g. an hour, and although the interview will be “reasonably open-ended and informal in manner, the researcher will be following an interview schedule or set of questions” (Remenyi, Williams, Money and Swartz 1998 p.176). However the interviewer is “free to modify their order based upon perceptions of what seems most appropriate in the context of the ‘conversation’, can change the way they are worded, give explanations, leave out particular questions... or include additional ones” (Robson 1993 p.231).

All interviews were taped and notes were transcribed. Analysis was conducted by ‘patterning’, which consisted of visually comparing responses to topic areas and noting any recurring patterns themes (Robson 1993). Due to the small number of interviews and qualitative data, more elaborate coding and categorising techniques were not employed nor was popular qualitative coding software used, e.g. NUD*IST®.

Table 9.10 is a matrix displaying key comments by the three interviewees about the primary topic areas and any other pertinent comments. The comments were gleaned from listening to the tapes and from examining the notes. The matrix display has the advantage of providing comments “in one place so that you can see more readily what

they are telling you” (Robson 1993 p.392), as opposed to narrative text that is “essentially sequential – one thing dealt with a time – with information spread over many pages” (Robson 1993 p.390).

Interviewees were first asked about the pilot study to confirm the appropriateness of the format and instrument, and shown its findings to discuss their meaning. All three interviewees thought the instrument was useful, easy to complete and thorough. None of the interviewees were surprised by the pilot study findings, especially ‘Jack’ who noted that availability and price are important to his firm.

Interviewees were next asked about the primary topic areas of customer service and satisfaction, and suppliers and relationships. All three interviewees provided their views of important customer service items and satisfaction as shown in Table 9.10. Important variables of on-time delivery and price featured in their comments, whilst all interviewees noted elements of communication in discussions about satisfaction. The comments were consistent with pilot study findings about these topics.

All three interviewees advised that relationships are important to them, and a theme of professionalism, honesty and integrity emerged from their comments. Morgan and Hunt (1994) and Garbarino and Johnson (1999) both posited trust and commitment as constructs of relationships in marketing, where trust was conceptualised primarily by the importance of confidence and reliability.

	Firm A – ‘Sally’	Firm B – ‘Tim’	Firm C – ‘Jack’
Interview Topics			
Customer Service and Satisfaction	<p>“customer service is more about responsiveness and empathy on both sides, looking for added value, wants to be treated like she treats her customers, important factors vary by situation and thus event, getting good service, being responded to and working with supplier”</p>	<p>“customer service consists of on-time, good quality and delivery, price yes as business is a commodity but it can be more of a filter, satisfaction includes all these plus communication or market information and helping you out by going out of their way”</p>	<p>“customer service is continuity and quality, with availability and price being important factors, firms are very price conscious, satisfaction is about meeting our needs and communicating with us, we are small with only 30 employees and would like to remain small</p>
Suppliers and Relationships	<p>“supplier qualities include responsiveness, professionalism, not cowboys, getting a response, items on time begin the definition of a relationship, she likes straight-line relationships, listening important on both sides, but finds industry a bit disappointing in not thinking ‘big’ and not pursuing relationship development”</p>	<p>“supplier qualities include ethics and integrity, new suppliers must also help solve problems, but it’s hard for new suppliers to break in as there are a certain amount of relationships involved in the business, suppliers must maintain old-fashioned but flexible and responsive values but also have niche values and be able to customise”</p>	<p>“supplier qualities include honesty and telling the truth, doing what you say you will and consistency, relationships are important as is personal contact on an ongoing basis, values of quality and consistency derived from family, there are 5 brothers in the firm who handle different aspects of the business, look for suppliers who share the same family values”</p>
Other Comments	<p>“buying process is once a week, she does it, she is not sure how many suppliers are IT based but she wants to set up website as her customer ASDA is looking for her to be EDI compatible, however she prefers telephone and personal contact, business seasonal only with respect to certain product groups such as salads”</p>	<p>“have EDI but don’t use it much, difficult to see its value at the sharp end, there is lots of ‘chumminess’ in the industry, which is particularly prevalent down south (England and Wales), some power or coercion exercised by the firm as it presently a buyer’s market due to low commodity prices”</p>	<p>“we only have a computer for operations and maintenance, accounts are still done by hand, an abacus works o.k. with WD-40</p>

Table 9.10: Matrix of Key Interview Comments

Morgan and Hunt (1994) discussed integrity as a component of trust, however it was only one of seven measures of trust in their empirical study and did not feature in their analysis or results discussions. Garbarino and Johnson (1999) did not use either integrity or honesty as a measure in their empirical study. Logistics authors, Bowersox (1990) and Tate (1996) amongst others, have also discussed trust as being conceptualised by confidence and reliability but primarily in operational terms such as joint assets and information sharing. None have empirically examined integrity and honesty as important elements of trust. The nature and importance of integrity and honesty in logistics relationships therefore remains murky but is important to the interviewees above. Thus, this issue will be incorporated in the main study and is further discussed in Chapter Ten.

Regarding other issues, all three interviewees commented that EDI or other technological innovations were not being used at their firms. As discussed in Chapters Three and Eight, technological adaptation in the food processing industry is important to retailers. However, the interviewees' comments support P-E International's survey of 260 IOLT members where "68% of respondents have no EDI links with their suppliers and only 11% have more than ten links" whilst "44% have no EDI links with their customers and only 17% have more than ten links" (1994 p.7). There has been no recent evidence that these trends have changed, and accordingly this issue will also be incorporated in the main study and further discussed in Chapter Ten. The two issues raised in section 9.4.4, and discussed in section 9.4.5 and above, do not imply that the pilot study results are not meaningful, significant or robust. However addressing these issues has provided an opportunity to enhance the thesis as well as pursue the methodological rigour called for in the literature.

9.5 CONCLUSION

This chapter discussed a pilot study conducted for this thesis that represents the first stage of the Churchill et al. framework detailed in Chapter Eight. Three research questions examined 16 customer service variables from the literature in three sub-

sectors of the Scottish food processing industry for their importance, their impact on customer satisfaction and whether they underlie any meaningful constructs.

The pilot study followed a rigorous application of the Churchill et al. framework and by itself was new and relevant in four ways. First, the 16 customer service variables have not been investigated in isolation from other customer service variables that have been identified in the literature. Second, this industry sector has not been surveyed empirically regarding the three research issues. Third, these variables have not been analysed independently to develop constructs of customer service. And finally, constructs from these variables have not been compared to the three other sets of constructs of discussed in Chapter Seven.

The pilot study utilised a postal survey sent to 380 firms. About one half of the firms were pre-contacted regarding participation. One hundred and five usable responses or about a 28% response rate were obtained following a follow-up mailout to contacted firms. The response rate of contacted firms (38%) was more than double the rate of firms not contacted (18%) supporting the literature on pre-notification, yet the follow-up response rate of 20% did not support the literature. Due to various constraints an unsolicited survey is proposed for the main study and a response rate about 20% is expected without pre-notification. To achieve sufficient numbers for statistical analysis a much larger sample is also proposed for the main study.

The five most important variables expected by respondents were on-time delivery, OSD, complete orders, price and action on complaints. The four least important variables expected by respondents were consistent OCT, appropriate OCT, customised services and ongoing information.

A large majority of respondents were marginally satisfied with the customer service provided by suppliers in an actual event, but of those who were dissatisfied two of the most important variables, price and action on complaints were key discriminating variables versus satisfied respondents. An importance weighted performance measure is proposed for the main study due to its better psychometric properties.

EFA found four significant factors utilising all 16 variables that underlie constructs of logistics customer service for this industrial sub-sector. Factor loadings and scale reliability tests were significant and thus the EFA is statistically robust. Since 16 variables were utilised, no 'purification' of variables is proposed for the main study. The factors found did not particularly relate to constructs derived in the other three sets found in the literature. Variables found in the first factor were appropriate and consistent OCT, customised services and ongoing information, which were the four least most important variables. Four of the five most important variables were in contained in the third factor whilst the remaining most important variables, price is contained in the fourth factor.

This dichotomous finding and the finding that the five important variables are transaction-oriented whilst the four least important variables are relationship-oriented led to follow-up interviews being conducted with respondents to examine the importance of relationships. The interviews confirmed the importance of relationships to respondents as well as transaction-oriented variables. Further investigation of this dichotomy or duality and its relationship to future intentions is proposed for the main study. Issues of suppliers possessing honesty and integrity and the lack of technology, particularly EDI being used in this industrial sub-sector emerged from the interviews. Further investigation of these two issues is proposed for the main study.

These findings confirm the domain of the construct being investigated and the items generated for investigation, in accordance with the first stage of the Churchill et al. framework. The findings thus provide a substantive and rigorous set of results with which to proceed to the second stage of the Churchill et al. framework. The second stage consists of collecting new data from a fresh sample and analysing the data to assess reliability and the various forms of validity discussed in Chapter Eight. This stage forms the main study for this thesis and is now discussed in the following chapter, Chapter Ten.